ANTARCTIC BIBLIOGRAPHY

NUNC COGNOSCO EX PARTE

THOMAS J. BATA LIBRARY
TRENT UNIVERSITY

ANTARCTIC BIBLIOGRAPHY

Volume 10

Prepared by the Library of Congress

GEZA T. THURONYI, Editor

Sponsored by the Division of Polar Programs, National Science Foundation

Library of Congress • Washington • 1979

ref Z6005 .P7A55 v10 1979

L.C. Card 65–61825

International Standard Serial Number:

ISSN 0066-4626

Key title: Antarctic bibliography

☆ U.S. GOVERNMENT PRINTING OFFICE : 1979 O—304-932

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402

Stock Number 030-018-00020-6

Introduction

This volume is the tenth in a continuing series of compilations presenting abstracts and indexes of current Antarctic literature published since 1962. A companion volume to the series, *Antarctic Bibliography, 1951–1961,* extends the coverage retrospectively.

The material has been compiled over a period of eighteen months; the cutoff date for inclusion in this volume was June 1979. To provide current awareness, the abstracts have also been distributed as monthly bulletins under the title *Current Antarctic Literature.* The bulletins are generated from a computerized data base which is also used in producing this cumulated listing and the indexes.

The present volume contains abstracts numbered from 19,249 to 21,721; these first appeared in issues no. 65 through 82 of *Current Antarctic Literature.* The first five volumes each contained 2,000 abstracts. Thus, items 1–2,000 appeared in volume 1 (published in 1965), items 2,001–4,000 in volume 2 (1966), items 4,001–6,000 in volume 3 (1968), items 6,001–8,000 in volume 4 (1970), and items 8,001–10,000 in volume 5 (1971). Volume 6 (1973) contained items 10,000–12,244, volume 7 (1974) items 12,245–14,447, volume 8 (1976) items 14,448–16,899, and volume 9 (1977) items 16,900–19,248.

The material is arranged in sections representing thirteen subject categories (see table of contents). Items that apply to two or more categories are listed in one section only and cross-referenced at the end of the other pertinent sections. Within each section, abstracts are arranged by accession number; the indexes are keyed to these numbers.

Foreign-language titles are given in English translation first, with the original title following in brackets. Transliteration of Cyrillic and romanization of oriental languages follow the Library of Congress systems. Some of the citations are followed by library call numbers, preceded by the library symbols commonly used in union catalogs.

As a rule, the abstracts are informative rather than descriptive, but no attempt is made to verify or critically evaluate the author's statements or conclusions. Author abstracts are either used unchanged or modified for the sake of brevity or conformity to guidelines adopted for this bibliography.

Four indexes are provided: (1) an author index that includes coauthors (anonymous journal articles are referred to under the journal name); (2) a subject index that occasionally extends to two levels of subheadings and contains cross-references; (3) a geographic index that contains names of places, stations, and geographic features as approved by the U.S. Board on Geographic Names; and (4) a grantee index to names of organizations or institutions that received financial support from the National Science Foundation for work that resulted in publications abstracted in the volume. In each index, entries are cited by a letter, indicating the subject category, followed by the accession number; for example, B–21350 refers to section B, Biological Sciences, item number 21350.

333723

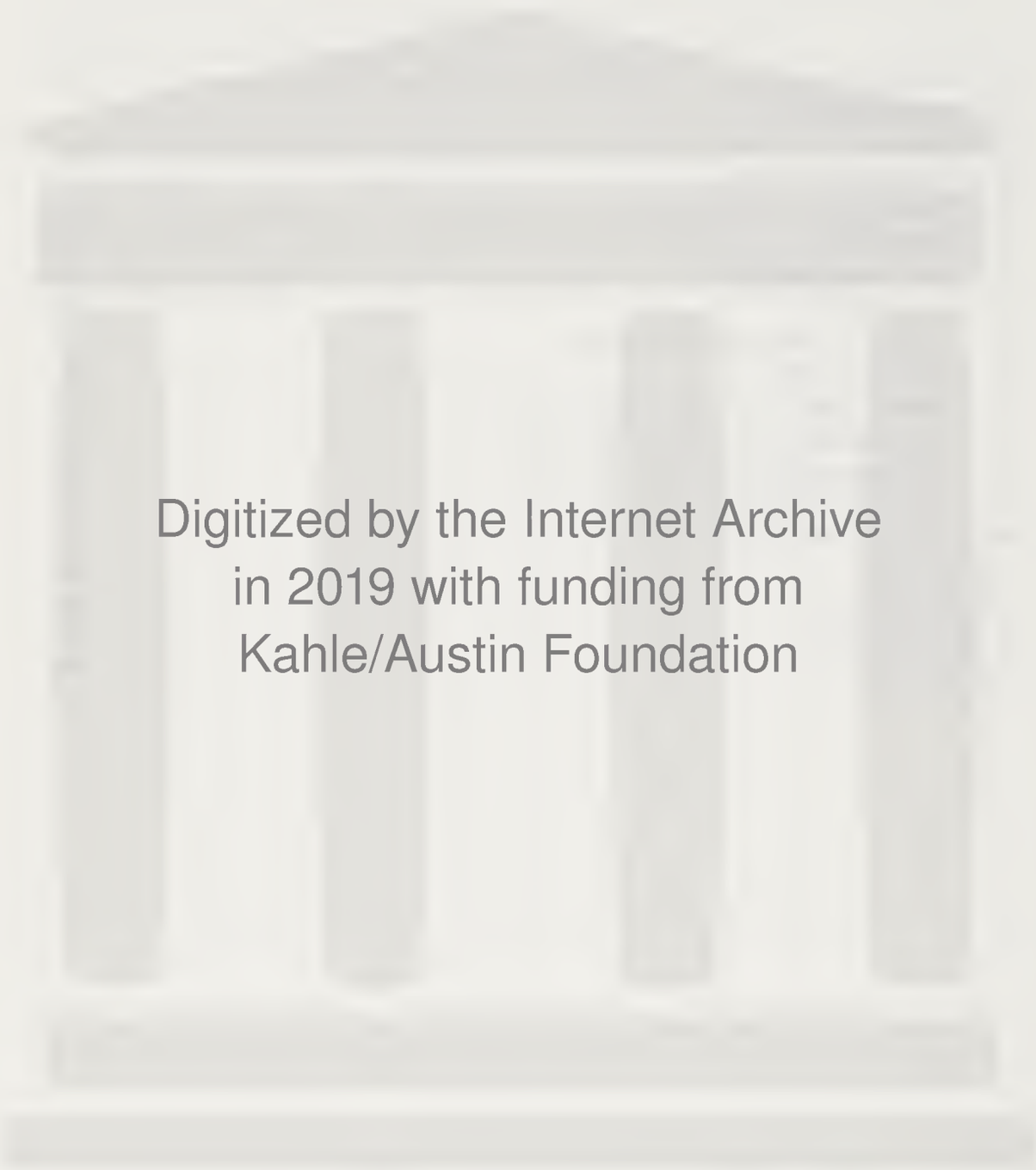
Although the majority of the publications abstracted were in the collections of the Library of Congress, many significant items were lent by or exchanged with other institutions, made available by the Division of Polar Programs of the National Science Foundation, or received as review copies or reprints directly from publishers and authors. Because they contribute to more current and complete coverage, review copies and reprints are especially valuable, and publishers and authors are encouraged to send them to the Library of Congress, Science and Technology Division, Cold Regions Bibliography Project, Washington, D.C. 20540, U.S.A.

Requests for photoreproductions of documents cited in this bibliography, except material protected by copyright, should be directed to the Library of Congress, Photoduplication Service, Dept. C-177, 10 First Street SE., Washington, D.C. 20540. U.S. government or government-sponsored technical reports may also, in most cases, be obtained from the National Technical Information Service, Springfield, Va. 22151.

Geza T. Thuronyi, *Head*
Cold Regions Bibliography Project
Science and Technology Division
Library of Congress

Contents

Introduction iii
Antarctic Bibiography
A General 1
B Biological Sciences 26
C Cartography 99
D Expeditions 102
E Geological Sciences 104
F Ice & Snow 160
G Logistics, Equipment & Supplies 209
H Medical Sciences 221
I Meteorology 232
J Oceanography 257
K Atmospheric Physics 283
L Terrestrial Physics 311
M Political Geography 319
Author Index 324
Subject Index 387
Geographic Index 482
Grantee Index 498


Digitized by the Internet Archive
in 2019 with funding from
Kahle/Austin Foundation

https://archive.org/details/trent_0116400883819_10

A. GENERAL

A-19269
Webster, J.J., **Antarctica. An information paper presented by Senator the Honourable J.J. Webster, Minister for Science,** Australia, Nov. 1977, 45p., Unpublished manuscript.

Increasing pressure for ever greater supplies of food, energy and minerals is focusing international attention on the Antarctic as the last major unexploited area of the world. Faced with the prospect of exploitation, the nations with an active interest in the Antarctic, including Australia, will have added responsibilities to ensure that the Antarctic environment is protected as activity there increases. This paper gives a historical account of activities in Antarctica. Following a physical description of the environment, the discussion examines territorial claims and the Antarctic Treaty, mineral resources and mineral exploration, living resources, Australia's presence in the Antarctic, activities of other nations, and marine research programs. Brief descriptions of the territorial claims, the text of the Antarctic Treaty, a map of Antarctica, and a summary of the level of nations' activities in Antarctica for 1976/77 are contained in Appendixes A through D, respectively.

A-19280
Surveyors in Antarctica, *New Zealand surveyor,* Sep. 1963 No.224, p.167-168.

A number of New Zealand surveyors have been honored by having their names attached to mountain peaks, glaciers, inlets, and other natural features of the antarctic landscape. This short article lists the scientists so noted, indicating their accomplishments and identifying the places named for them.

A-19306
Kusunoki, K., **Newspaper articles on the JARE with the *Kainan Maru* during her calls at Wellington and Sydney in 1910-1912,** *Antarctic record,* Aug. 1977 No.59, p.177-211, In Japanese with English summary.

During the cruise of the *Kainan Maru* of the Japanese Antarctic Expedition led by Lieutenant Noby Shirase in 1910-1912, she called at Wellington twice and Sydney once; Wellington from February 8 to 11, 1911 and from March 23 to April 2, 1912, Sydney from May 1 to November 19, 1911. A total of 30 Australian and New Zealand newspaper articles published mainly during the calls of the ship are collected without annotation. These articles supplement the records of the activities of the Expedition hitherto published, such as the "Nankyoku-ki (official report)" (1913). (Auth.)

A-19307
Rowley, P.D., Schmidt, D.L., **In Madison: Antarctic reviewed,** *Geotimes,* Dec. 1977 22(12), p.24-25.

This is a report on the symposium held at the University of Wisconsin in August 1977. Highlights of the meeting are mentioned, and most of the speakers and their topics listed.

A-19336
Drewry, D.J., **Uncertain future of the Falkland Islands,** *Polar record,* Jan. 1977 18(115), p.400-402, Review of Economic survey of the Falkland Islands, compiled by the Falkland Islands Survey Team, London, Her Majesty's Stationery Office, 1976, 2 vols.

The two volumes reviewed are the outgrowth of a four-week visit by the survey team headed by Lord Shackleton, to the Falklands to review the resources of the islands and dependencies, evaluate prospects for future growth, examine the fiscal, constitutional and social structure of the colony, recommend economic improvements and assess their likely impact. The proposals outlined in volume 2 seek a sharp increase in the levels of further research, exploration, investment, and commercial interprise. The report recommends significant improvements in agriculture; local industries and crafts; tourism; kelp, fish, and krill development; and offshore mineral exploitation. Further, improved transportation is considered a crucial factor to the future sustained development of the Falkland Is. economy. Changes to the Falkland Is. government service are vital for effective implementation of the proposals. It is believed that the Falklands will suffer an accelerated decline in living standards and social infrastructure if these recommendations are ignored.

A-19346
British Antarctic Survey, 1976-77, *Polar record,* Sep. 1977 18(117), p.597-605.

Six main British Antarctic Survey stations were occupied throughout the year. Adelaide air base on Adelaide I. was closed down at the end of the summer as it has been replaced by a new station, Rothera, 64 km to the northeast. An important step in the coordination of the Survey's activities in the Antarctic was the completion and occupation of the new BAS headquarters in Cambridge. The Survey continued its studies in marine biology, marine resources, limnology, terrestrial biology, geology and field geophysics, glaciology, topographical surveying and mapping, and meteorology and ionospherics. The investigations are summarized.

A-19351
Vahlquist, B., **Anders Sparrman and his translation of Rosén von Rosenstein's textbook on children's diseases during Captain Cook's expedition to the antarctic regions and round the world (1772-1775),** *Acta paediatrica Scandinavica,* May 1977 66(3), p.269-272, 8 refs.

This article gives a short biography of Anders Sparrman, a Doctor of Medicine, and a member of Capt. Cook's expedition to the Antarctic, 1772-75. During the voyage aboard the *Resolution,* Sparrman translated into English a textbook by the Swedish physician, Rosén von Rosenstein entitled *Treatise on the diseases of children.* He later published a number of translations and other works, including a narrative dealing with his voyage with Cook (originally published in Swedish in 1802 and 1818 and in English, 1944).

A-19356
New Zealand Antarctic Society, **Antarctic, Vol.8, No.1,** Christchurch, Mar. 1977, p.1-40.

This issue of *Antarctic* contains summaries of the polar activities of New Zealand, the United States, Australia, the United Kingdom, the Soviet Union, Japan, Norway, South Africa, and Poland, and two general articles on tourism and the Antarctic Center at Cambridge. Among the news events reported are the first tests of a hovercraft on the ice at Scott Base, the recovery of the last of three damaged Hercules aircraft from Dome C, the discovery of meteorites in Victoria Land, and completion of the New British Antarctic Survey base at Rothera Point.

A-19357
New Zealand Antarctic Society, **Antarctic, Vol.8, No.2,** Christchurch, June 1977, p.42-72.

This issue of the *Antarctic* contains an article by D.S. Horning on a Snares I. expedition, an article on krill research, summaries of the polar activities of New Zealand, the United States, Norway, Australia, the United Kingdom, the Soviet Union, Poland, Italy, Chile, and South Africa, and a general section. Both Britain and the United States will begin more intensive research into krill next season. Poland, the first country to join the 12 signatories of the Antarctic Treaty, now has a permanent antarctic research station, *Arctowski,* established last season in Admiralty Bay, King George I. The Soviet vessel, *Mikhail Somov,* was caught in the ice off Oates Land for 57 days. A general news item recounts the accomplishments of Rear-Admiral George Dufek, a former commander of the United States Naval Support Force, Antarctica, who died in Washington on Feb. 10, 1977.

A-19358
New Zealand Antarctic Society, **Antarctic, Vol.8, No.3,** Christchurch, Sep. 1977, p.74-104.

This issue contains an article on antarctic waste by C. Monteach, abstracted separately as item no. G-19359, news of the polar activities of New Zealand, the United States, Australia, the United Kingdom, and Japan, and several articles of general interest: an obituary, and items pertaining to Whaling Commission activities, tourism, and an antarctic reunion. A 10-yr moratorium on all commercial whaling for all species was not accepted by the International Whaling Commission at its 29th annual meeting in Canberra, but it made a cut of 38 per cent in quotas for the 1977-78 and 1978 seasons. As a result the total catch of all species has been reduced to 17,839. Last year's quotas were set at 28,591.

A-19363
Pelseneer, J., **Adrien-Victor-Joseph de Gerlache de Gomery,** Académie royale des sciences, des lettres et des beaux-arts de Belgique. Biographie nationale, Vol.39, No.1, Brussels, Emile Bruylant, 1976, p.390-430, Refs. p.427-430.

Gerlache de Gomery was captain of the *Belgica,* which undertook to circumnavigate Antarctica under the sponsorship of the Belgian Royal Society for Geography in 1897. Charcot considered Gerlache the first European to winter in antarctic areas. His book, *Fifteen months in the Antarctic* is a masterpiece not only of narrative adventure but also of style. Gerlache died in 1934, having taken an active part in exploration, scholarship, and naval affairs in war and peace for many years.

A-19370
Clapperton, C.M., Sugden, D.E., **Scenery of the south: Falkland Islands, South Georgia, Subantarctic islands,** Aberdeen, 1975, 17p.

DLC GB445.C56

This booklet illustrates and attempts to explain some aspects of the scenery of the Falkland Islands, the Antarctic Peninsula and intervening chains of sub-Antarctic islands. The origin of the various land masses on which the scenery has developed is very different. The Falkland Islands are part of the continental shelf of South America and have geological and landscape similarities with parts of Argentina. South Georgia, the South Orkneys, the South Shetlands and the Antarctic Peninsula are similar in many respects to the Andes and reflect the presence of blocks of continental rocks standing above younger rocks (volcanic) of the surrounding ocean basins. The South Sandwich Islands are quite different, representing an arc of active volcanoes similar in origin to the Lesser Antilles. They are rather inaccessible and do not figure in this booklet.

A-19380
France. Ministère d'Etat chargé des départements et territoires d'outre-mer. Terres australes et antarctiques françaises. Direction des laboratoires scientifiques, **Scientific research in the French Southern and Antarctic Lands. Outline of Plan 6** [La recherche scientifique dans les terres australes et antarctiques françaises. Projet pour le VIe plan], 1970, 64p., In French.

After reviewing the status of French antarctic and subantarctic scientific activity at the end of the preceding year, the document sets forth projected tasks for 1970. Plans include new and ongoing efforts in the following scientific fields: geophysics, atmospheric physics, glaciology, geology, seismology, zoology, botany, human physiology and medicine. Costs for new installations and for operation of all phases of the French research program are given.

A-19426
Yokokawa, K., **1974 visit to the new South Pole Station** [Nankyoku shin kichi shuzai yowa, 1974], *Polar news (Kyokuchi),* Jan. 1976 No.22, p.10-18, In Japanese.

This is a Japanese journalist's report on the newly-opened Amundsen-Scott Station and on Siple Station, to which he made a 5-week visit. He describes the dedication ceremony at Amundsen-Scott, the facilities, construction and daily life.

A-19428
Toyama, T., **Visit to Antarctica** [Nankyoku homon inshoki], *Polar news (Kyokuchi),* Jan. 1976 No.22, p.43-49, In Japanese. 4 refs.

This is a report by a member of the National Antarctic Committee who made a 4-month inspection trip to Showa Station in 1974. The first part of the article consists of his experiences at sea, particularly in the stormy zone, and under severe ice conditions. The second part provides a view of installations, equipment, and supplies at Showa Station and a description of research activities in marine, biological, geophysical, environmental, meteorological and oceanographic fields. The author strongly recommends the expansion of summer research and especially supports the idea of a 5-month short-term project rather than an 18-month one, to offer more scholars the opportunity to participate.

A-19429
Ohyama, Y., **Report of an ANARE observer** [Osutoraria-tai ni sankashite], *Polar news (Kyokuchi),* Jan. 1976 No.22, p.50-53, In Japanese.

The author was an exchange scientist with the ANARE in 1975-76. He traces Australian Antarctic research efforts since their inception, reviews the geography and history of Macquarie Island, and describes the installations and research there and at Mawson and Davis Stations on the continent.

A-19430
Murakoshi, N., **Projects of the 15th JARE wintering team** [Dai Jugoji etto no wadai], *Polar news (Kyokuchi),* Jan. 1976 No.22, p.34-36, In Japanese.

The main interests of the 15th JARE were geological and environmental, and therefore most of the work planned was in the field. Inland trips to the Yamato Mountains for meteorites, observations of surface shapes of accumulated snow, measurement of snow temperature, and snow coring were taken. Living quarters and a fuel depot as well as trenches and tunnels were constructed at Mizuho Base. A new environmental science building for biological, medical and geophysical research was also put up. Pollen and spores from pinaceae, rise, wild spinach and ferns were discovered in antarctic snow and ice.

A-19431
Nagai, M., **Preface** [Kantogen], *Polar news (Kyokuchi),* July 1976 No.23, p.1, In Japanese.

The author, Japan's Minister of Education, reaffirms his nation's basic support of the fundamental principles of the Antarctic Treaty and states the tenets on which Japan's future antarctic research will be founded. Scientific projects will be selected on the basis of academic significance and large-scale endeavors will be sufficiently backed to allow their completion within a definite time frame. Research related to resource development, i.e., geology, environmental and ecological effects of resource exploitation, marine biology, will be stressed. Every effort will be made to further international cooperation, to enlarge its scope, and to expand exchange programs. Also, the antarctic ship Fuji will be replaced.

A-19432
Hoshiati, T., Funaki, M., **Profiles of members of the 16th JARE** [16-ji Ettotaiin no yokogao], *Polar news (Kyokuchi),* July 1976 No.23, p.38-42, In Japanese.

Brief personal sketches of the 30 members of the 16th JARE are given. Professional background, assigned duties, tastes and hobbies, daily life style in the Antarctic, and anecdotes are included.

A-19435
Silkin, B.I., **Antarctica today; results of ten years of research** [Die Antarktis heute; Ergebnisse zehnjähriger Forschungen], *Umschau,* Oct. 1, 1967 No.19, p.615-622, In German. 14 refs.

Results of scientific research carried out by Soviet scientists in the Antarctic since 1956 is summarized under the headings of geography, cartography, geology, topography, glaciology, climate, terrestrial physics, biology, oceanography and political geography.

A-19437
New Zealand Antarctic Society, **Antarctic, Vol.8, No.4,** Christchurch, Dec. 1977, p.106-136.

This issue contains reports of the polar activities of New Zealand, the U.S., Australia, France, the USSR, the U.K., South Africa, Japan and Argentina, articles on antarctic tourists and Marion I. cats, and news of general interest. The ninth consultative meeting of representatives of the Antarctic Treaty nations held in London from Sep. 19 to Oct. 7 agreed to check exploration and exploitation of Antarctica's mineral resources while the environmental effect of such activities are being studied and to draft a regime for the protection of krill and other living resources. Biologists have begun a program to eradicate the cat population of Marion I. by the introduction of a feline virus. Wild cats on the island are killing the bird population at an alarming rate. Tourism has become almost an antarctic growth industry this year with day trips by air and cruises.

A-19438
Mitchell, B., **Antarctic riches—for whom,** *Mazingira,* Aug. 1977 No.2, p.71-77.

Some of the issues involved in the question of resource exploitation in Antarctica are examined. Resources of interest include oil, gas, minerals, crabs, lobsters, fishes, and most important, krill. Although the Antarctic Treaty fulfilled the need for a solution to early territorial issues, its position on resource exploitation is unclear. It is suggested that the treaty forum, which is made up of those countries technologically powerful enough to undertake substantial work in the area, is both exclusive and unrepresentative. Three possible approaches to the problem are considered: 1) a declaration by the treaty powers of joint sovereignty over the continent and its shelf; 2) an agreement on the territorial issue in favor of the claimants; or 3) provisions for freedom of access to the resources. If the Treaty is stretched to take in resource management it may fail in its initial objective of ensuring that Antarctica does not become the scene or object of international discord. It must make room for other organizations and initiatives.

A-19439
Mitchell, B., **Attention on Antarctica,** *New scientist,* Sep. 22, 1977 75(1070), p.714.

The question of resource exploitation in Antarctica is being examined at a closed meeting in London of the 13 consultative parties to the Antarctic Treaty. Immediate interest is focused on krill and offshore oil and gas. It is expected that resource recovery will have both local and global environmental implications in addition to re-opening old wounds of territorial dispute. Further, Antarctica is attracting the attention of the wider international community. At the opening session emphasis was placed on the need to guard against the harmful effects of antarctic resource exploitation, respect the positions of both claimants and non-claimants on the territorial issue, reach decisions serving the long term interests of the Antarctic and world community, and get across the real issues in Antarctica to the general public.

A-19440
Mitchell, B., **Antarctic enlightenment,** *New scientist,* Oct. 10, 1977 176(1074), p.130.

A moratorium was declared on antarctic mineral exploration and exploitation at the recent meeting in London of the 13 Antarctic Treaty consultative powers. No agreement, however, was reached on regulating krill fishery, which is a more immediate prospect for exploitation. Further, no mention was made of the interest of the wider international community in krill. It is hoped that enlightenment on this issue will be effected before the Treaty parties start drafting their definitive regime.

A-19460
Scientific Committee on Antarctic Research, [**Reports of 12th SCAR meeting, Aug. 1972**], Unpublished manuscript, 1972, 90p.

This is a group of unpublished reports issued at the SCAR meeting in Canberra in 1972. Included are: the report of the opening plenary session, which outlines SCAR programs, its relations with other groups, and its publication activities; the report of the finance committee; the report of the subcommittee of specialists on seals; the report of meetings of a group of delegates considering 11th SCAR recommendations and adopting them as standing resolutions; the report of the working group on logistics; the biology working group report; the report of the specialists on Quaternary studies; a SCAR statement on the use of radio-isotopes in Antarctica; comments on this; a list of delegates; and the lyrics of the SCAR Marching Song.

A-19468
New Zealand. Department of Scientific and Industrial Research. Antarctic Division, Mead, K.L., comp, **Bibliography of dry valley publications produced under the aegis of the New Zealand Antarctic Research Programme 1959-1976,** Christchurch, 1977, 48p.

The Bibliography of dry valley publications comprises 256 references to papers by New Zealand authors and overseas authors whose research projects were carried out under the aegis of the New Zealand Antarctic Research Program. The bibliography supersedes the previously circulated Bibliography of dry valley publications produced as a result of the N.Z.A.R.P. To ensure that the bibliography remains current, supplements will be issued on an annual basis. The material is arranged under sections according to scientific subject content. Within each section, items are arranged alphabetically by first author. An author index is supplied at the back.

A-19469
Harrington, R., **Richard Harrington's Antarctic,** *Alaska geographic,* 1976 3(3), 104p.

DLC F901.A266

This is a colorfully illustrated book about the Antarctic and the Subantarctic as seen by a Canadian photographer. The author did not seek out scientific stations to report their studies, but concentrated on the natural beauty and magnificence of the continent and its surrounding islands. The text and photographs are presented in the following sections: the Friendly Falkland Islands; In Shackleton's Wake, which describes the Scotia Arc region including the South Orkney, South Shetland and South Sandwich groups as well as South Georgia; South from New Zealand: the Subantarctic Islands; Historic Antarctica; the Antarctic Peninsula; Deception Island; and Birds and Mammals of the Antarctic. Also included are a chronology of antarctic discovery and important events (appendix A), and the text of the Antarctic Treaty (appendix B).

A-19481
Splettstoesser, J.F., **Polar studies,** *Geotimes,* Jan. 1977 22(1), p.36-37.

The third field season of surface geophysical, glaciological, and ocean-tide measurements on the Ross Ice Shelf was completed as part of the U.S. antarctic program in the 1976-77 austral summer, thus essentially concluding this aspect of the RISP. An important factor in the large-scale aircraft support required for RISP was the recovery of 2 of the 3 LC-130 Hercules aircraft that crashed in 1975 at Dome C. Salvage of the third aircraft is planned for late 1976 or early 1977. Other U.S. earth-science programs in the McMurdo area included a search for meteorites, a radioactivity survey of rocks, seismic anisotropic investigations and a study of volcanic rocks. Geological mapping was carried out on the Dufek intrusion, and investigations of the Scotia Arc, Antarctic Peninsula, and southern South America were continued.

A-19483
Taylor, M.S., **Focus on the Falkland Islands,** London, Robert Hale, 1971, 185p.

DLC F3031.T3

The author relates her experiences as a visitor to the Falkland Is., namely to see the islands and write about the way of life. The narrative gives details of the 30-day voyage to the islands and the return trip, and treats the islands' history, geography, industry, government, bird and animal life, as well as the way of life of the people. Photographs, a chronological list of dates, a selected bibliography, and an index are provided.

A-19485
South Africa. Weather Bureau, **News from the islands, Antarctica and SANAE** [Nuus van die eilande, Antarktika en SANAE], *Nuusbrief (News letter),* Jan. 1968-Aug. 1977 (incomplete) Nos.226-249, 262-321, 325, 334-337, 339-341, var. p., Text and titles in Afrikaans or English.

DLC QC851.S82

The title is a variable heading of reports containing news of scientific work performed, station maintenance, balloon ascents, weather statistics, and general remarks on equipment, unusual situations, and so forth. These South African research activities are on Marion and Gough Islands and at SANAE Station, Antarctica.

A-19493
Dodge, E.S., **Polar Rosses: John and James Clark Ross and their explorations,** London, Faber and Faber, 1973, 260p., 38 refs.

DLC G635.R6D62 1973

The lives and achievements of the two British nineteenth-century explorers John (the uncle) and James Clark Ross (the nephew) are narrated. Both Rosses were noted arctic explorers who had added hundreds of miles of coastline and scores of geographical features to the map. In addition, James Clark Ross commanded several antarctic expeditions aboard the *Erebus* and the *Terror.* His numerous geographical discoveries included Victoria Land, the Ross Sea, McMurdo Sound and the great Ross Ice Barrier. He was an expert on terrestrial magnetism and carried out meticulous magnetic observations. His failure, however, to attain the South Magnetic Pole as he had the North Magnetic Pole was a matter of infinite regret to him.

A-19494
New Zealand. Department of Scientific and Industrial Research, **DSIR research 1975,** Its Information series No.109, Wellington, N.Z., 1975, 268p., Refs. p.227-262.

This issue of DSIR Research reviews the organization and activities of the Department of Scientific and Industrial Research and various research associations. Antarctic studies included geological mapping, investigation of antarctic soils, work on the Dry Valley Drilling Project and considerable biological work. At Scott Base, an important link in the global chain of geophysical observing stations, research is conducted in aurora and airglow, geomagnetism, the ionosphere, whistlers and VLF, meteorology, and seismology. During the summer season, field parties based at Scott Base or Vanda Station carry out extensive programs in geology, biology, geochemistry, glaciology, hydrology, and oceanography.

A-19495
Laws, R.M., **British research in the Antarctic,** *Royal Society of Arts. Journal,* Oct. 1976 126(43), p.630-645.

This paper, authorized by the Director of the British Antarctic Survey, discusses the history of British exploration and research, outlines the logistic background and describes studies in the atmospheric, earth, and life sciences. The BAS maintains five permanent bases in the Antarctic and three minor bases used for summer operations only.

A-19515
Hamburg. Bundesforschungsastalt für Fischerei, **Research and exploration of the resources of krill and food fish in the Antarctic,** Hamburg, Apr. 1977, 76p., Unpublished manuscript. 27 refs.

The main object of the expedition was the exploration of the possibilities for the development of commercial fishing of krill and food fish in antarctic waters. The research program covered the following sectors: a) biological investigations of krill and food fish and the establishment of environmental factors important to their distribution; b) detection and fishing techniques; and c) processing technology and product development. This report discusses the motives for the study, the tasks, the organization and preparations, the progress of the cruise, equipment used and work performed, aspects of international cooperation, and the outlook for future research.

A-19529
Kaminuma, K., Torii, T., Yanai, K., Matsumoto, G., Tanaka, Y., **Activities of Japanese party in McMurdo Sound area 1976-77,** *Antarctic record,* Nov. 1977 No.60, p.132-146, In Japanese with English summary. 4 refs.

A Japanese party consisting of five members participated in the last field survey season in the McMurdo Sound region from November 4th, 1976 to January 23th, 1977. The main international project of this season was the search for meteorites, named ANSMET (Antarctic Search for Meteorites), a U.S.-Japan joint program. Eleven specimens of meteorites have been found in the area of bare ice near Dry Valleys, South Victoria Land. The total weight of collected meteorites amounted to 460 kg, 4.5 times larger than that of Yamato meteorites which had been collected by Japanese parties around the Yamato Mountains, 350 km southwest of Showa Station. A geologi-

cal survey was carried out in the McMurdo Sound region for comparative study of geological structures with those in Lützow-Holm Bay. Water samples were collected for detailed chemical analyses from Don Juan Pond in the Wright Valley and Lake Bonney in the Taylor Valley. Field geochemical studies were also carried out at several places in the Dry Valleys and Ross Island. This program is a supplementary work to complete the geochemical researches of the Dry Valley Drilling Project. Micro-seismological observations with three-component seismographs were conducted for three weeks at Scott Base and four days at Vanda Station. (Auth.)

A-19530

Kaminuma, K., Utsumi, T., **New computer system of the National Institute of Polar Research,** *Antarctic record,* Nov. 1977 No.60, p.147-153, In Japanese with English summary.

A new computer system, A HITAC M-160 II, was put up at the National Institute for Polar Research in Tokyo. Although the primary consideration was to provide data processing support for scientists of the Institute, other capabilities are also built into the system: data storage on all aspects of polar research, image processing, and document retrieval. Digital map data are included among the files. The tapes of the *Antarctic Bibliography* data base are supplied by the Library of Congress in Washington, D.C.

A-19568

Akademiia nauk SSSR. Mezhduvedomstvennaia kommissiia po uzucheniiu Antarktiki, **U.S.S.R. national report to SCAR, No.19,** Moscow, 1977, 65p., Refs. p.49-65.

Projects carried out at Soviet antarctic stations are summarized in charts for the following fields: meteorology; aurora; cosmic rays; ionosphere; geomagnetism; seismology; geodesy; glaciology; hydrology; and medicine. Summer programs and traverses are also briefly described. The proposed plan for SAE 1978 is outlined, and a bibliography of Soviet antarctic literature for 1976 provided.

A-19725

Thuronyi, G.T., **Language distribution of antarctic literature,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.202-203, 2 refs.

This article provides statistical data on the language distribution of literature cited in the *Antarctic Bibliography.* The sample examined consists of records entered into the data base from Nov. 1971 to Oct. 1976, and covers volumes 6 through 8 and part of the forthcoming volume 9. The total number of records in the sample was 7,248, divided as follows: English 5,368 (74.02 percent), Russian 1,057 (14.58 percent), Japanese 264 (3.64 percent), French 251 (3.46 percent), Spanish 214 (2.95 percent), German 41 (0.57 percent), Norwegian 14 (0.19 percent), Polish 11, Italian 9, Bulgarian 7, Afrikaans 6, and Czech, Dutch, Flemish, Portuguese, Rumanian, and Swedish 1 each. Tbe numbers given for English and Russian may be somewhat misleading in that a significant portion of the Russian literature is being translated into English and may appear in both the Russian and English counts. In comparison with the foreign-language papers cited in volumes 1 through 5, the present figures reflect a decrease in Russian and French items while the percentage of Spanish, Japanese, and Norwegian papers has increased. A more thorough search effort by the project in Japanese and the Scandinavian languages was reported earlier.

A-19736

Kazarian, R., **Media representatives in Antarctica,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.215.

During the 1976-77 season seven newsmen went to Antarctica accompanied by a member of the National Science Foundation's Public Information Branch to observe first-hand the scientific research being done there and to report their findings to the public. The group included representatives of the *New York Times, Chicago Tribune, Christian Science Monitor, U.S. News & World Report, Readers Digest,* and *KCRA-TV.* The coverage resulting from this tour is briefly summarized.

A-19737

Splettstoesser, J.F., **Mining in Antarctica: survey of mineral resources and possible exploitation methods,** International Conference on Port and Ocean Engineering Under Arctic Conditions, 3rd, Fairbanks, Aug. 11-15, 1975, Vol.2, University of Alaska, 1976, p.1137-1155, 30 refs.

A list of known occurrences of economic minerals in Antarctica is sparse at best, but the reason for this may be simply the result of inadequate exploration. Only about five percent of the continent is not covered with ice, and this greatly hampers direct observations of potential deposits. Another factor in limiting exploration for minerals is that the emphasis has been on basic science rather than commercial ventures. Assuming that some deposits might eventually become economic, several exploitation methods could be considered, depending on whether a deposit is ice-free or ice-covered. In the case of a deposit in the interior, transport to the coast would be a major problem. Coastal facilities for ship docking, initial concentrating of ores, and similar basic units would have to be constructed for virtually any exploitation operation. Offshore mining of manganese nodules and drilling for petroleum and natural gas are likely in view of present information on their occurrences. Other likely potential resources include coal and iron. Towing of icebergs to arid regions for water supply is considered to be feasible, but requires additional study before being implemented. Difficult technological problems will have to be resolved before any exploitation can begin. This may be a decade or more in the future and will involve large amounts of money. Political disputes over sovereignty of potential deposits loom as an issue that remains to be solved. (Auth. mod.)

A-19752

Smith, A., **Looking into the health of the antarctic icecap,** *Science forum,* Dec. 1977 10(6), p.26-27.

This is a brief review of the British research stance in the Antarctic and its justification. Some reasons for British Antarctic Survey are more immediately practical than others—for instance, investigations into marine biology to allow krill harvesting—but all, even glaciological studies that seem abstruse, are based on the assumption that the state of the antarctic icecap, polar weather, geology or effect of extreme climate on the human body, has some direct relation to concerns of the average Britisher.

A-19756

Splettstoesser, J.F., **Offshore development for oil and gas in Antarctica,** International Conference on Port and Ocean Engineering Under Arctic Conditions, 4th, St. John's, Sept. 26-30, 1977, Vol.2, Memorial University of Newfoundland, 1978, p.811-820, 32 refs.

Estimates of oil and gas resources in Antarctica range from 20 to 45 billion barrels of oil and 80 to 115 trillion cubic feet of natural gas, all of it on the continental shelf. There are no proved reserves, however. Because of ever-increasing demands for hydrocarbons as a primary source of energy, an active exploration program is anticipated for offshore Antarctica in perhaps the next decade, and probably in the Ross Sea. Sea ice and icebergs pose the greatest threat to development of offshore resources, but present experiences in Davis Strait and the Labrador Sea show that those problems can be dealt with, either by iceberg towing or closing off a hole and reoccupying later. No fixed structures would seem feasible, but dynamically positioned semisubmersibles could be used for all phases of development and

exploitation because of the deeper continental shelf around Antarctica. Bottom production systems would supplement surface vessel requirements, as bottom-scouring by icebergs should be no problem in these water depths. Because of Antarctica's remoteness, a longer supply line would be a disadvantage. (Auth.)

A-19760
Sunada, S., **Preface** [Kantogen], *Polar news,* Jan. 1978 No.26, p.1, In Japanese.

In commemoration of the 20th anniversary of the JARE, its history since the IGY is outlined. The author attributes the success of the expeditions to the accumulations of labors of earlier researchers, and prefaces this special edition by paying his respects to them.

A-19761
Kaya, S., **Decision to create JARE** [Nankyoku kansoku no hajimari no omoide], *Polar news,* Jan. 1978 No.26, p.2-5, In Japanese.

The author, former president of the Science Council of Japan, relates some memorable events in the early days of Japanese antarctic research. He recalls the decision to undertake polar expeditions, the difficulties in raising funds, the institution of the Polar Special Committee, the remodeling of the *Soya,* the debate over giving Asahi news exclusivity, the entrapment of the *Soya* in the pack, and the construction of the icebreaker *Fuji.* In conclusion, future problems of antarctic natural resources are discussed.

A-19762
Hanzawa, S., **Beginnings of JARE** [Nankyoku kotohazime], *Polar news,* Jan. 1978 No.26, p.6-10, In Japanese.

The author, who was an editor with Kagaku Asahi at the time, recalls the inception of the JARE program. Suggested by the Shirase Antarctic Expedition in the Meije era, the first JARE was proposed by Japanese scholars, approved by the government, and accepted by researchers connected with the IGY. At the Brussels Convention, the Prince Harald Coast was chosen as the site for Japanese activity.

A-19763
Nagata, T., **Proposal for first JARE and the unsuccessful second wintering** [Nankyoku kansoku no hajimari to dai-ni-ji tai haitai no ki], *Polar news,* Jan. 1978 No.26, p.11-15, In Japanese.

Although the Japanese committee for IGY originally had no intention of engaging in antarctic research, once it accepted the proposal and presented it to the international body, it received support from Russia and the United States, opposition from Australia and New Zealand. The author includes his own diary of the second wintering team's failure to overcome adverse weather.

A-19764
Okano, K., **Role of JARE headquarters** [Omoi okosu mamani], *Polar news,* Jan. 1978 No.26, p.16-20, In Japanese.

The author was on the staff of the JARE headquarters as director of the Science Division of Higher Education and Science Bureau, at the time of the first Japanese expedition. He reminisces about the early days of the program and speaks hopefully of its continued success.

A-19770
Inada, A., **Recollections of JARE's early days** [Omoi dasu koto nado], *Polar news,* Jan. 1978 No.26, p.48-50, In Japanese.

The author reminisces about the financial, administrative and logistic problems that arose in the early days of Japanese antarctic research. After the struggle to establish an antarctic program in Japan, the setbacks of having the *Soya* icebound and having to desert station and dogs were particularly disheartening.

A-19773
Wadati, K., **Recalling 20 years of JARE** [Nankyoku-kansoku 20-nen o kaiko shite], *Polar news,* Jan. 1978 No.26, p.58-62, In Japanese.

These are the recollections of the former president of the Japan Meteorological Society, who participated in the fifteenth JARE as an observer. After describing his experiences on the sixth continent, he looks forward confidently to many more years of productive activity by the Japanese antarctic program.

A-19775
Ikeda, H., **Antarctic sightseeing flight by Air New Zealand** [Nankyoku-tanken-hiko wa onigiwai], *Polar news,* Jan. 1978 No.26, p.67, In Japanese.

Seven years ago the author, a professional photographer, visited Hallett, McMurdo and Scott bases. He recounts his impressions.

A-19778
Orheim, O., **Preliminary report of the 1976/77 Norwegian Antarctic Research Expedition,** *Oslo. Norsk polarinstitutt. Årbok,* 1976 (Publ. 1977), p.327-332.

The expedition was organized and led by Norsk Polarinstitutt, with the author as expedition leader. The expedition ship was M/V *Polarsirkel,* a Norwegian icebreaker/sealer built in 1976. She left Norway in late November 1976, and returned at the end of March 1977. The expedition consisted of 21 Norwegian scientists, one visiting Argentine scientist, and a two-man film crew. During the months of January and February the scientists conducted research in the Weddell Sea and on Dronning Maud Land, working as two separate parties, a land party and a marine party. Research programs in meteorology, geology, paleomagnetism, biology, and oceanography are briefly described in general terms.

A-19799
Meier, S., **From Greenland to Antarctica; in memory of Fritz Loewe** [Von Grönland nach Antarktika: Fritz Loewe zum Gedächtnis], *Petermanns geographische Mitteilungen,* 1975 119(4), p.300-302, In German. 9 refs.

The life of F. Loewe, (1895-1974) Ph.D. in meteorological sciences, who participated in many Greenland and Antarctic expeditions, is described. In 1937 Loewe moved from Germany to Australia, where he founded a Meteorological Institute at the University of Melbourne, which he directed until his retirement in 1961. A member of A. Wegener's research team, Loewe used his extensive knowledge and experience in numerous antarctic research projects.

A-19800
Wille, H.H., **Alluring poles; struggle for the North and South Poles** [Lockende Pole; der Kampf um den Nord- und Südpol], Leipzig, Urania, 1977, 392p., In German.
DLC G580.W52 1977

The author gives a well-written popular account of exploration and research in the Arctic and Antarctic, the hardships endured and difficulties encountered, experiences gained and the establishment of scientific stations. The following pages are pertinent to the Antarctic: 63-86, 138-164, 187-214, 267-278 and 290-367.

A-19847
Terent'ev, A.V., Tsareva, L.D., **AKP unit for producing protein paste from krill** [Agregat AKP-VNIRO dlia proizvodstva belkovoĭ pasty iz krilia], *Rybnoe khoziaĭstvo,* Sep. 1972 No.9, p.67-68, In Russian.

A unit capable of turning krill into a marketable protein paste directly from the sea was tested on the research vessel *Akademik Knipovich.* The machine has a throughput of 1,000 kg/hr of freshly caught krill and converts this into 250-300 kg of paste. The animals are pressed to yield a protein-rich liquid, out of which the protein fraction is coagulated and frozen into bricks.

A-19856

Santiago de Chile. Instituto Antártico Chileno. Comité Nacional de Investigaciones Antárticas, **National report to SCAR for 1976; Activities from 1974 to 1976; Programs for 1976-1977** [Informe nacional al SCAR—Año 1976; Actividades período 1974-1976; Programas 1976-1977], Santiago de Chile, 1976, 23p., In Spanish. 22 refs.

This report summarizes the research conducted at Chile's Frei, Prat, O'Higgins, Videla, and Yelcho Stations, on its two ships *Piloto Pardo* and *Yelcho,* and at its temporary base camps. The research is grouped by discipline, in terms of programs accomplished. Proposed programs for 1977 are listed briefly. A bibliography of publications based on the work is also included.

A-19857

Royal Society of New Zealand. National Committee for Antarctic Research, **Summary of research programmes, 1976 and proposed research programmes, 1978,** *Royal Society of New Zealand. National Committee for Antarctic Research. Report to SCAR,* 1977 No.19, 25p., Refs. p.17-21.

DLC Q180.A6N4

Summaries are given of New Zealand antarctic activities in 1976 winter and 1976/77 summer. Principal atmospheric science work was done at Scott Base and included projects in aurora and airglow, geomagnetism, ionospheric physics, and meteorology. South Pole and Vanda Stations also carried out meteorological investigations. Projects in each of the following disciplines are listed with the location of the work and comments: cartography; chemistry; ecology; geochemistry; geology; geomorphology; glaciology; hydrology; seismology; volcanology; and biological sciences. Members of committees and working groups are named.

A-19858

Australian Academy of Science. National Committee for Antarctic Research, **Australian antarctic and sub-antarctic research programme, January 1976-March 1977; comments on current activities 1977; proposed programmes, January-December 1978,** Melbourne, 1977, 61p., Refs. p.57-61.

This report of Australian scientific activities in Antarctica and the Subantarctic summarizes research programs from Jan. 1976 to March 1977, and comments on current activity and proposed programs for 1978. Stations, ships' voyages, and the proposed wintering staff for 1978 are listed. Publications generated by Australian workers in 1976 are appended in a bibliography.

A-19859

Buenos Aires. Instituto Antártico Argentino, **Activities of Argentina in Antarctica in 1977/78** [Actividades de la Republica Argentina en la Antártida durante la temporada 1977/78 y año 1978], Buenos Aires, Nov. 1977, 100p., In Spanish.

This report on Argentine activities and plans for 1977/78 is divided into the following sections: ships, planes and other vehicles in use; expeditions of air force, fleet and land personnel; bases both temporary and permanent; personnel; types of personal arms held by personnel; research programs, by station; major scientific equipment, by station; transportation and communications; first aid and medical facilities; and appendices on radio communication by station and on the radioisotope program.

A-19862

Kirk, R., **Snow,** New York, William Morrow and Co., 1978, 320p., Refs. p.309-314.

DLC GB2603.7.K57 1978

This wide-ranging treatment of the subject of snow is designed for the general reader and deals with snow as a factor in hydrology, climatology, animal ecology, and economics, a threat and an aid to human life, a source of wonder and sport, and a topic for further research. One chapter is devoted to the early attempts to penetrate both northern and southern polar regions, and the chapter "Arctic and Antarctic" compares the two areas with their many contrasts in climate and biology. The numerous ways in which animals and man have learned to adapt to snow, even to take advantage of its peculiar properties, are discussed in some detail. A comprehensive index is included.

A-19866

Sullivan, E., **Krill rush: tiny fish puts Antarctica up for grabs,** *Interdependent,* Apr. 1978, p.8.

On the eve of the expiration of the Antarctic Treaty, the author reviews the problems that face the world in settling the fate of antarctic resources. Although mineral rights are probably ultimately more valuable, fishing rights involve fewer legal and political pitfalls and are therefore serving as a precedent-setting issue in the antarctic debate. The Treaty powers plan to open southern waters to all who wish to take krill, thereby heading off third-world claims to a share of the pie.

A-19881

Mirovoĭ tsentr dannykh MGG B, **Catalogue of data and publications on the Arctic and Antarctic; Vols. 1, 3-6** [Katalog dannykh i publikatsiĭ po Arktike i Antarktike; Vypusk 1, 3-6], Moscow, 1962, 1967, 1969, 1973, 1976, 5 Vols., In Russian, English, German, French and Spanish.

DLC Z6005.P7M5

These catalogs list publications and data from different countries, pertaining to the Arctic and Antarctic regions. Regions and stations at geographical latitudes over 60 deg are considered Arctic or Antarctic. The catalogs are arranged by discipline: general, meteorology, glaciology, oceanography, geology, biology, cartography, logistics, medicine, atmopheric physics, terrestrial physics and political geography. All the data and publications listed in the catalogs are available at the WDC B1 and may be obtained by purchase or on exchange.

A-19890

Rautiaĭnen, IU.S., **Experiences of the computer group** [Opyt raboty gruppy EVM], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten',* 1977 No.96, p.54-58, In Russian.

Experience with computerized data processing at the Molodezhnaya meteorological station is described. Types of errors are tabulated. Information is transmitted to Molodezhnaya from points all over the continent and from ships by radio. It was found that a large percentage of the errors introduced into the system results from inadequate training of radio operators and data entry personnel. Expanded training in the unique requirements of computer data entry is needed for all researchers and radio operators handling information destined for processing at Molodezhnaya.

A-19950

Buenos Aires. Instituto Antártico Argentino. Dirección Nacional del Antártico, **Summary of Argentine scientific antarctic programmes: summer season 1972/73 and winter 1973,** Oct. 1972, 3p.

An outline of Argentine activities in the summer of 1972/73 and the winter of 1973 is presented with three charts. Divided into earth sciences, biological sciences, and upper air sciences, the programs are briefly described and the responsible institution, number and type of personnel, survey area, and duration of the study listed.

A-19953
Australia. Department of Supply. Antarctic Division, **Annual report—1971-72,** Brunswick, Victoria, Defence Printing Establishment, [1972], 50p., 28 refs.

The report covers a vast number of projects. Atmospheric physics, glaciology, cosmic ray physics, biology, medicine and medical research, scientific instrumentation, including an unmanned geophysics observatory, engineering and logistics, communications and photography are all discussed in some detail and the individual projects underway described. Appendices list senior and professional staff, wintering staff, summer field parties, ships' operations, air support, and publications.

A-19954
Australia. Department of Supply. Antarctic Division, **Australians in the Antarctic,** Canberra, 1971, 24p.

Lavishly illustrated with color photographs, this is primarily a public relations booklet reviewing the history and present status of Australian scientific research in Antarctica and on the subantarctic islands.

A-19974
Buenos Aires. Instituto Antártico Argentino, **Directives for the Winter Antarctic Project CINIAA 1968—Belgrano Station** [Directivas para la campaña antártica de invierno CINIAA 1968—Base General Belgrano], Sep. 1967, 13p., In Spanish.

The team at Belgrano Station in 1968 was concerned with investigation of atmospheric physics and auroras. Plans for studying the upper atmosphere and auroras by ionosondes, all-sky photography and other means are discussed. Instructions for both black-and-white and color film development are given.

A-19975
Buenos Aires. Instituto Antártico Argentino, **Directives for the summer antarctic project of the Argentine Antarctic Institute 1968-69 (CAVIAA 1968-1969)** [Directivas para la campaña antártica de verano del Instituto Antártico Argentino 1968-69 (CAVIAA 1968-1969)], Sep. 1968, 11p., In Spanish.

This report outlines the plans for the Argentine summer effort in the Antarctic in 1968-1969. The main objectives for the year were to install new facilities at Brown and Belgrano Sations and to pursue the study of the 1967 volcanic event on Deception Island. Histological studies of antarctic wildlife were also scheduled.

A-19976
Buenos Aires. Instituto Antártico Argentino, **Directives for the winter antarctic project CINIAA 1969—Brown Station** [Directivas para la campaña antártica de invierno CINIAA 1969—Estación cientifica Almirante Brown], Sep. 1968, 12p., In Spanish.

The work planned for 1969 at Brown Station was largely in the field of biology. Human and animal metabolism and endocrinology, electrophoresis of penguin serum, and marine ecology were topics of top priority. All projects scheduled for the winter season are outlined and described.

A-19977
Buenos Aires. Instituto Antártico Argentino, **Directives for the antarctic winter project CINIAA 1970—Brown Station** [Directivas para la campaña antártica de invierno CINIAA 1970—Estación científica Almirante Brown], Sep. 1969, 15p., In Spanish.

The scientific program at Brown Station in 1970 was concentrated on five major areas: human and animal physiology; oceanography; nuclear power studies; wildlife observation and census; and routine continuing observations of snow, ice, aurora, and other elements of the environment. A brief breakdown of the investigations to be pursued in each discipline is given.

A-20005
Vasil'chikov, N.V., **Prospects for the industrial exploitation of Antarctica** [Perspektivy promyshlennogo osvoeniia Antarktiki], *Ekonomika i organizatsiia promyshlennogo proizvodstva,* 1976 No.6, p.171-182, In Russian.

The thrust of the article is that new technology now exists which makes exploitation of the continent feasible. It is noted that as mineral resources become more difficult to exploit elsewhere, it becomes increasingly feasible to exploit minerals in Antarctica. Mineral exploitation on the southern continent will be aided by the development of new drilling technology, by the use of electrochemical methods for converting solid minerals into liquid or gaseous form, and by employing nuclear technology. Antarctica is an excellent site for nuclear power stations because of the vast quantities of water available; the heated water emanating from such plants could be first cooled by the glaciers before being dumped into the sea, thus excluding damage to marine life. Antarctica would be an ideal site for combined nuclear power plant-metallurgical plant installations. It would similarly be perfect for the production of power from cosmic helio-electric power stations, as well as for creating thermogradient electric power stations.

A-20006
Kelly, C., **RGS archives: Part 3. America, the Antarctic and the Arctic,** *Geographical journal,* July 1976 142(2), p.287-301.

This is a list of manuscripts, journals, letters, sketches, maps, logs and other papers of antarctic explorers, sailors, scientists and whalers held by the Royal Geographical Society in London.

A-20011
Bickel, L., **This accursed land,** London, Macmillan, 1977, 210p.

DLC G875.B5A34 1977b

This book narrates the exploits of Sir Douglas Mawson, whose epic journey across hundreds of miles of unknown antarctic wasteland has been described as "the greatest story of survival in Polar exploration." The explorations of the Australasian Antarctic Expedition of 1911-13 led by Mawson spanned some 2,000 mi of the unknown antarctic coastline, and the expedition carried out a notable amount of scientific research. One party penetrated the inland to get closer to the South Magnetic Pole than anyone had been before. In an attempt by Mawson and two companions to penetrate the far eastern coastline of the antarctic continent, one of the trio fell to his death into a deep crevasse with the tent and most of the food. With his other companion, who died within weeks, Mawson began the heroic journey back to winter quarters.

A-20012
Huxley, E., **Scott of the Antarctic,** London, Weidenfeld and Nicolson, 1977, 303p., 54 refs.

DLC G875.S35H88 1977

This book relates the story of the life, achievements, and tragic end of R.F. Scott, Captain of the British Antarctic Expeditions: *Dis-*

covery 1901-4 and *Terra Nova* 1910-12. Scott and four companions perished on the return trip from the South Pole after reaching the Pole to find that Amundsen had preceded them. The book contains character studies of Scott's mentor, Sir Clement Markham, his wife Kathleen, his family and members of his expedition. Biographical material is also included on Scott's contemporary, Shackleton.

A-20018

Langone, J., **Life at the bottom: the people of Antarctica,** Boston, Little, Brown and Co., 1977, 262p.

DLC G860.L36

This is a popular treatment of life and work in the Antarctic. The author, a journalist, visited the Antarctic as guest of the National Science Foundation, to observe the U.S. Antarctic Research Program and the U.S. Navy support effort and write about these activities in the public interest. Attention is also given to the antarctic environment, historic landmarks, climate, and early explorers.

A-20020

Royal Society of New Zealand. National Committee for Antarctic Research, **Summary of research programmes, 1973, and proposed research programmes, 1975: Report No.16 to SCAR,** Wellington, 1974, 23p., Refs. p.16-20.

DLC G846.R68a

Research activities conducted during 1973 at Scott Base, Vanda Station, and Cape Bird in the atmospheric, earth, and biological sciences are summarized, and planned programs for 1975 are outlined. Also listed are names and addresses of responsible authorities, members of the 1974 national committee for antarctic research, members of SCAR working groups, and a bibliography of publications resulting from the work.

A-20058

Krill—an immense but vulnerable source of protein, *South African shipping news and fishing industry review,* Mar. 1971 26(3), p.65,67.

A review of the research on krill is offered, with emphasis on practical aspects of the resource of interest to fishermen. The author enters a strong caveat, however, that, although the technology exists or soon will, the ecological impact of krill exploitation has not been sufficiently studied.

A-20059

Watson, J., **Antarctic explorers: new definitives for British Antarctic Territory,** *Stamp monthly,* Feb. 1973 3(9), p.157-160, 178-181.

The issuance of a new stamp series for the British Antarctic Territory in Feb. 1973 is taken as an occasion to review former stamps commemorative of antarctic explorers. Both the stamps of the new series and former stamps of particular interest are shown and discussed. Most show a portrait of the leader of the expedition being celebrated; captions to the photographs discuss the sources of the portraits and comment briefly on the aims and accomplishments of the voyages.

A-20060

Glasby, G.P., **Ross Sea,** *New Zealand science review,* 1976 33(3), p.62-65.

Introduced by a brief history of the discovery and exploration of the Ross Sea area, this review discusses the various aspects of the region of interest to science—the sea itself, the ice shelf, nearby geological conformations, the dry valleys, and the sea ice. Projects carried out to investigate many of these features are mentioned.

A-20072

Hempel, G., **Productivity of the oceans,** *Canada. Fisheries Research Board. Journal,* Dec. 1973 30(12,Part2), p.2184-2189, 20 refs.

The ratio of total world fish landings to annual primary production, about 1:3000, suggests a poor exploitation of the biological productivity of the world ocean. The yield differences among areas are caused by three groups of factors: 1) Primary production; 2) Length, structure, and transfer efficiency of the food chain; 3) The rate of exploitation of the fish resources. Any attempt to increase world fishery yields aims at a change of one of the three groups of factors. Artificial changes in primary production are of local importance only. Changes in the length and structure of food chains are achieved through a shift of interest to abundant groups of organisms that are closer to primary production. Exploitation of antarctic krill and the mass culture of mussels are promising examples. Increases in the exploitation rate can be achieved through better adjustment of fishing to population dynamics of heavily exploited stocks and through extension of pelagic fisheries, particularly in certain parts of the southern hemisphere and the open ocean. (Auth. mod.)

A-20073

Liubimova, T.G., Naumov, A.G., Lagunov, L.L., **Prospects of the utilization of krill and other nonconventional resources of the world ocean,** *Canada. Fisheries Research Board. Journal,* Dec. 1973 30(12,Part 2), p.2196-2201, 14 refs.

Animals in the lower trophic levels offer strong possibilities for increasing commercial utilization of ocean resources. The most urgent task is to develop commercial fisheries among animals at the second trophic level, the zooplankton. The most promising of these are the crustaceans, especially the krill of the antarctic, *Euphausia superba,* which occupy areas of the ocean south of the antarctic convergence in extremely high concentrations. The resource may be between 0.8 and 5 milliards of tons, yielding a total commercial catch as high as 25-50 million metric tons. Other crustaceans that may some day support commercial fisheries include other species of *Euphausia, Munida, Pleuroncodes,* and *Calanus.* The problems facing the development of fisheries for these animals are to devise efficient catching methods and methods of processing that preserve the nutrient value while providing acceptable products. Soviet work with krill has yielded promising results. A special midwater trawl has give catches of 10-20 tons/hr. The food value of krill is high. It can be made into protein paste for human consumption, or used as fodder. To make the paste the krill are pressed, the extracted juices treated with heat, and the coagulated paste is separated and frozen. Tests with animals fed this paste showed higher rates of growth than those fed with beef. Krill has been used in the production of "shrimp butter" and "melted cheese," the latter having been produced commercially since 1970. Other products show promise. Also in the Southern Ocean are squid and krill-eating fishes that have potential commercial value. (Auth. mod.)

A-20089

Kaminuma, K., Miyamoto, K., **Documents retrieval system at National Institute of Polar Research,** *Antarctic record,* Mar. 1978 No.61, p.93-101, In Japanese with English summary. 1 ref.

An information retrieval system was established for the HITAC M-160 II computer system which is installed in the National Institute of Polar Research. The system was named POLDOR (Polar document retrieval) and works in retrospective search and selective dissemination of information. The information source of POLDOR is the *Antarctic Bibliography* published by the Library of Congress, which is supplied on magnetic tapes. (Auth.)

A-20103
New Zealand. Department of Scientific and Industrial Research, **DSIR research 1977,** Its Information series No.128, Wellington, N.Z., 1977, 176p., Refs. p.147-176.

This publication reviews the organization and activities of the DSIR and research associations. The Antarctic Div., established in May, 1959, coordinates and implements all New Zealand antarctic activities. Its functions are outlined. Antarctic bases maintained by N.Z. include Scott Base, Vanda Station, and Cape Bird Station. The research at Scott Base and nearby Arrival Heights provides information in the fields of ionospherics, geomagnetism, earth currents, atmospheric physics, auroral physics, seismology, and meteorology. Infrasonic wave recording equipment has been installed. Summer field parties carry out investigations in geology, geomorphology, geochemistry, volcanology, glaciology, hydrology, oceanography, and the biological sciences. Soil studies are also being conducted. New Zealand and the United States cooperate in providing logistic support to their respective programs.

A-20104
New Zealand. Department of Scientific and Industrial Research. Antarctic Division, **New Zealand antarctic research programme 1977-78,** Christchurch, Oct. 1977, 21p.

This booklet discusses the planning and operation, organization, research activities, and 1976-77 field events of the New Zealand antarctic research program and comments briefly on personnel, dogs, climate, historic hut restoration, and future activities. The operation and control of all projects is directed through Scott Base. A history and description of the station is given. Research is also conducted at Cape Royds, Cape Bird, Vanda Station, and Arrival Heights. The events of the 1976-77 program are reported.

A-20133
McWhinnie, M.A., **Antarctic research,** *Marine Technology Society. Journal,* June 1974 8(5), p.3-7, 1 ref.

United States research in the Antarctic is summarized. The U.S. currently conducts research from four permanent stations: McMurdo, Pole, Siple and Palmer; a surface camp remains at Byrd Station. The seas are studied by use of ice breakers and the ship *Hero.* Scientists from Argentina, Australia, Chile, Japan, Germany, New Zealand, South Africa and the USSR have participated in U.S. programs. Biological investigations are being conducted on krill, benthic fauna, energy flow through the antarctic ecosystem, penguins, seals, birds, and insects. Studies in other disciplines include freshwater lakes, geology, glaciology, upper atmosphere physics, and meteorology. McMurdo is the main U.S. scientific and staging center for other stations and field parties working in Antarctica.

A-20159
Great Britain. Antarctic Place-Names Committee, **Gazetteer of the British Antarctic Territory,** London, Her Majesty's Stationery Office, 1977, 36p.

The *Gazetteer of the British Antarctic Territory, South Georgia and the South Sandwich Islands* issued on Oct. 23, 1962, and its three Supplements, have been superseded by two gazetteers listing placenames in the British Antarctic Territory and in the Falkland Islands Dependencies (South Georgia and the South Sandwich Islands) respectively. This Gazetteer contains a list of the 3,862 place-names in the British Antarctic Territory accepted for use in British official publications up to the end of October, 1976. Although the U.S. Board of Geographic Names does not always accept the British designation, the rate of concurrence is very high—about 95%. The list includes 190 new names gazetted for the first time, two altered forms of names previously listed as accepted, one previously rejected name that has been reinstated, and three previously listed names that are now rejected. Four names were listed in the previous Gazetteer or one of its Supplements, but their positions or boundaries have since been amended or redefined. The names are arranged alphabetically with the specific part of the name first. The latitudes and longitudes are mid-positions taken from the latest sources available. The existence of more accurate maps and charts has made it necessary to revise the co-ordinates of 2,178 names from those recorded in the previous Gazetteer and its Supplements. (Auth. mod.)

A-20166
Czubasiewicz, B., **To Antarctica on the *Tazar*** ["Tazarem" ku Antarktydzie], Gdynia, Poland, Wydawnictwo Morskie, 1977, 107p., In Polish.

DLC G850. 1976 .P642

This is an account by one of the men who sailed on the Polish research vessel *Tazar* on a mission for the Polish Fisheries Institute of the State Academy of Sciences to investigate the potential economic resources of the Scotia Sea, especially krill. Written for the general reader, the book traces the ship's route and activities from the Canary Islands, south to Montevideo, back and forth across the Scotia Sea trawling for krill, and then north to South Africa. The text is accompanied by a large number of photographs.

A-20190
Two naval medical explorers, *Great Britain. Royal Naval Medical Service. Journal,* Winter 1977 63(3), p.149-156.

Edward Atkinson was medical officer on the Scott Expedition in 1910. Because of a health problem, he did not accompany Scott on his inland journey, but assumed command of the remaining part on the *Terra Nova.* The following year, when the inland party did not return, Atkinson led the group that found Scott's camp and the frozen bodies of the team. At the same time as Atkinson's men were waiting out the winter at Cape Evans, Campbell's party; isolated without stores and provisions, was under the medical care of George Levick. During the long winter before they managed to rejoin the *Terra Nova,* Levick carried on work on the Adelie penguin.

A-20191
Dubrovin, L.I., Korotkevich, E.S., **Soviet research in the Antarctic** [Sovetskie issledovaniia v Antarktike], Moscow, Gidrometeoizdat, 1977, 15p., In Russian.

This pamphlet traces the development of the Soviet research effort in the Antarctic since the 18th century. The early voyages are dealt with in passing, and research since the 1950's is discussed in some detail.

A-20192
Crawford, L.T., **"Uruguayan Flag at the Pole" from the 60th parallel to the Antarctic** ["La Bandera Uruguaya en el Polo" hacia el paralelo sur 60 grados sur Antártico], *Montevideo. Instituto Antárctico Uruguayo. Publicación,* 1967 No.19, p.15-16, In Spanish. 2 refs.

"La Bandera Uruguaya en el Polo" was the title of a motion that the flag carried by the *Instituto de Pesca No.1* rest in the National Museum in commemoration of Uruguayan activity in the Antarctic. The article recounts the efforts of Uruguayan sailors, airmen, and ships to rescue members of the Shackleton expedition marooned on Elephant Island.

A-20194
Musso, J.C., **Uruguay in the "Antarctic club"** [Uruguay en el conjunto antártico de naciónes], *Montevideo. Instituto Antártico Uruguayo. Publicación,* 1976 No.19, p.29-41, In Spanish. 23 refs.

The participation of Uruguay in international programs in Antarctica, including the International Geophysical Year and SCAR activi-

ties, is traced. After a general discussion of Uruguay's role, her efforts are broken down by discipline: biology; geodesy and cartography; geology; glaciology; logistics; meteorology; oceanography; upper atmosphere, and earth physics.

A-20195

Torres de la Llosa, J.P., **International moratorium on whales** [Veda internacional a la fauna cetácea], *Montevideo. Instituto Antártico Uruguayo. Publicación,* 1976 No.19, p.55-58, In Spanish. 6 refs.

Cetacea occurring in the Southern Ocean are broken down by families, and the present kill is briefly discussed. Recommendations for significantly reducing world-wide whaling and for a complete moratorium on whaling south of 60S are set forth.

A-20196

Swinton, W.E., **Physicians as explorers. Joseph Hooker: botanical journeys in Antarctica and India,** *Canadian Medical Association. Journal,* Oct. 8, 1977 117(7), p.824-828, 4 refs.

Joseph Hooker, friend of Darwin and Lyell and long-time director of the Royal Botanical Garden, Kew, accompanied James Clerk Ross on his two expeditions in 1839 and 1841 to the Antarctic. As ship's surgeon and naturalist, the young man, fresh from medical school, collected flora in Victoria Land and a number of subantarctic islands.

A-20198

McWhinnie, M.A., ed, **Polar research: to the present, and the future,** American Association for the Advancement of Science selected symposium 7, Boulder, Colo., Westview Press, 1978, 309p., Refs. For abstracts of papers see A-20199, A-20210, B-20200, B-20204 through B-20207, B-20209, E-20201, G-20208, I-20202, and J-20203, or 32-4115 through 32-4117.

Highlighting twenty years of U.S. scientific research conducted since the International Geophysical Year (IGY) of 1957-58, the authors provide an overview of major polar research programs, past and present; explore concepts derived from highly interrelated aspects of physical and life sciences; and seek to offer a glimpse of future polar science and polar development. The introduction briefly describes major physical, biological, and interdisciplinary research programs, as well as the magnitude, extent, and international character of contemporary polar science. Twenty years of polar biological investigations are then reviewed, and subsequent chapters address principles and advances in meteorology, physical oceanography, glaciology, and the geological evidence that bears on the origin of Antarctica. These physical sciences delineate a matrix for the polar biospheres and provide a background for understanding the major categories of structure and dynamic functioning of the marine ecosystem, polar marine mammals, adaptational physiology, and terrestrial biotic adaptations.

A-20199

Gould, L.M., **Emergence of Antarctica,** Polar research: to the present, and the future, edited by M.A. McWhinnie, Boulder, Colo., Westview Press, 1978, p.9-26.

This paper traces the history of Antarctica through its various stages of development and discusses its present status. Antarctica was a myth in the classical ages which evolved as a hypothetical continent up to the 20th century. The first third of the 20th century is commonly referred to as the Heroic Age. Then came the modern age in which Antarctica has emerged as the world's greatest natural laboratory. In addition to its value as a natural laboratory, the continent has, in effect, become a political science laboratory, with the Antarctic Treaty, a historic, successful experiment pointing the way for future progress toward international cooperation.

A-20209

Rutford, R.H., **Polar research: status and prospectus,** Polar research: to the present, and the future, edited by M.A. McWhinnie, Boulder, Colo., Westview Press, 1978, p.263-272, 3 refs.

The antarctic portion of this status and prospectus on polar research focuses on a discussion of environmental issues within the framework of the Antarctic Treaty. The increasing awareness of antarctic environmental problems became evident in the early 1970's with the first hint of hydrocarbons, the increase in tourism, and the increasing harvest of fish and krill. In addition to the procedural issues focusing on the admission to consultative status of nations now active in antarctic research, treaty consultative meetings today deliberate on both living and mineral resources. SCAR has the task of assisting in the resolution of the political questions. The prospectus of polar science is clouded by the potential impact of events outside the normal venue of the scientific community. The treaty mechanisms and SCAR provide the arena in which political and economic decisions will be made, but the scientific community must be involved if they hope to maintain and improve the role of science in the polar regions.

A-20210

McWhinnie, M.A., Anderson, D.M., **Major international polar research problems,** Polar research: to the present, and the future, edited by M.A. McWhinnie, Boulder, Colo., Westview Press, 1978, p.273-286.

This paper summarizes a number of international polar programs, the objectives and scope of their investigations, and briefly describes in broad outlines 20 years of polar science since the International Geophysical Year. The programs include studies of marine ecosystems, oceanic currents, bottom water formation, climate and the role of ice in climate dynamics, solar-terrestrial physics, and antarctic glaciology. In addition, special studies are being made of the Southern Ocean, the Ross Ice Shelf, the West Antarctic Ice Sheet, the East Antarctic Ice Sheet, the dry valleys, and the Scotia Arc-Antarctic Peninsula.

A-20212

Waikato. University. Antarctic Research Unit, **Report No.4,** [Hamilton, New Zealand], 1975, 31p.

DGS, S(890)qUn4ar

The major aim of the 1974-75 summer field expedition was to continue the study of the chemistry, physics and sedimentology of the Victoria Land lakes and dry internal drainage basins. Research results are briefly summarized, and the chemical analysis of Lake Wilson and other antarctic waters are given in tables. A list of publications of the Antarctic Research Unit is included.

A-20213

Waikato. University. Antarctic Research Unit, **Report No.7,** [Hamilton, New Zealand], 1978, 25p.

Members and publications of the Waikato research team are listed and the scientific activities of the group for the past year briefly described. The latter included: contribution to the glacial history of Antarctica; a sediment study of Lake Fryxell; a snow geochemistry study at Vostok Station; botanical research in the Ross Island/Dry Valleys region; vision research in several species; limnology of Deep Lake and Skua Lake; studies of the Erebus Glacier tongue; and uranium-thorium dates of sedimentary rock samples, the data from which study is appended to the report. Work of previous Waikato research expeditions is outlined.

A-20233

Zavatti, S., **Antarctic expeditions of the [Italian] National Research Committee** [Le spedizioni antartiche del C.N.R.], *Il polo,* Mar. 1978 34(1), p.29-31, In Italian. 4 refs.

This is a brief review of the three expeditions in which Italian scientists and alpinists have taken part. Three Italian researchers and three mountaineers accompanied the *Endeavour* in 1968-69; five participated in dry valley studies in 1973-74, and four concerned themselves with microclimatic studies in the Wright Valley in 1976.

A-20240

Australia. Bureau of Meteorology, **International Antarctic Meteorological Research Centre,** Melbourne, 1967, 15p., 14 refs.

This pamphlet describes the purpose, physical facilities, and administration of the IAMRC in Melbourne. It operates under the sponsorship of SCAR, and WMO grants fellowships for scientists wishing to work there. The research program is outlined, future support discussed briefly; and publications of the center listed.

A-20241

French southern and antarctic territories, 1772-1972 [Les terres australes et antarctiques françaises 1772-1972], *Industries et travaux d'outre-mer,* Feb. 1973 No.219, p.4-17, In French.

DLC HC59.A15I45

Discovered by French seamen in 1772, the Crozet and Kerguelen archipelagoes remain in French hands, as does a segment of the antarctic continent known as Terre Adélie. This article discusses the opening of these territories, the present-day administration under a 1955 law granting the areas administrative and fiscal autonomy, permanent installations, and the scientific research program underway. Each scientific discipline is reviewed briefly and the accomplishments of French workers recounted.

A-20243

Antarctica [La antártica], *Geochile,* [1978] No.13, 58p., In Spanish.

This lavishly illustrated magazine offers an overview of the Antarctic and the Chilean research program there. Intended for the general reader, it is divided into the following sections: political geography; physical geography; geography of transportation; human history; and economic geography. There is also a short summary of the activities of the Instituto Antártico Chileno and its participating universities. A separate wall-size map showing the entire continent and the portion claimed by Chile is included.

A-20246

Bell, C., **Falkland Islands,** *Oceans,* 1974 7(1), p.26-31.

The author, sent to the Falkland Islands by the British Government to make recommendations for the improvement of the Falkland Islands educational system, describes the geography, economy and way of life of the small agricultural population. He briefly traces the history of the islands, the sovereignty of which is still in dispute between Great Britain and Argentina.

A-20255

Piedrabuena spends a month in Antarctica [Piedrabuena permanece un mes en la Antártida], *Antártida,* June 1975 No.6, p.21, In Spanish.

This short article discusses the first Argentine known to spend more than a month in the Antarctic. At the time he was a young man and member of the crew of the North American whaler and sealer, the *John E. Davidson.* When this ship became trapped in pack ice in 1852, the crew lived on seal meat for over 30 days.

A-20263

Pierrou, E.J., **Antarctic toponymy** [Toponimia Antártica], *Antártida,* June 1975 No.6, p.50, In Spanish.

The toponymy of Belgrano Island and the South Sandwich Islands is discussed briefly.

A-20265

Slemenson, M., **Philately: Japan and JARE** [Filatelia: Japon y el J.A.R.E.], *Antártida,* June 1975 No.6, p.60-61, In Spanish.

Colored illustrations and short discussions of stamps and covers from the icebreaker *Fuji,* the *Tonan Maru,* and Showa Station are given.

A-20267

Great Britain. Natural Environment Research Council, **British Antarctic Survey,** Cambridge, 1977, 20p.

This booklet describes the British Antarctic Survey, its development, administration, bases and logistics support. The scientific program is summarized in some detail; the Atmospheric Sciences and Earth Sciences Divisions carry on important routine data-gathering programs, contributing to international networks, as well as engaging in independent research, while the Life Sciences Division pursues studies of both marine and terrestrial ecosystems and of human physiology under extreme conditions.

A-20268

Great Britain. Natural Environment Research Council, **British Antarctic Survey: annual report, 1975-76,** Cambridge, 1977, 40p.

This report summarizes work done by the BAS both in the Antarctic and at home. The highlight of the year was the opening of the new center at Cambridge by HRH the Duke of Edinburgh. High on the agenda of the Atmospheric Sciences Division were preparations for the International Magnetospheric Study; equipment for two of the special projects for IMS, the HF Doppler and the magnetic pulsation experiments, was successfully deployed. Summer-only field research in geology is being carried out at South Georgia, the South Shetlands, Alexander Island, and Palmer Land. Programs in glaciology and biological sciences are also reported on. A list of the publications resulting from 1975-76 work is appended.

A-20269

Geological Society of America, **1975 annual meetings,** *Geological Society of America. Abstracts with programs,* Sep. 1975 7(7), 1350p., Abstracts.

This volume contains the program and abstracts of papers presented at the 88th annual meeting of the Geological Society of America and its associated societies. General information, a chronological outline of the program, special events, a detailed technical program, the calendar of technical sessions, and an index of authors are included. Abstracts of papers pertinent to the Antarctic appear on p.1077, 1117, 1150, and 1291.

A-20271

Saez G., A., **Argentine antarctic as you've never seen it** [La Antártida argentina como jamás se vó], *Gente y la actualidad,* Mar.4, 1971 6(293), p.40-54, In Spanish.

This is a popular illustrated magazine and shows colored pictures of icebergs, of the men and equipment at Belgrano Station, and of ice breakers at work.

A-20272

Fuchs, V., Laws, R.M., **Discussion on scientific research in Antarctica,** *Royal Society of London. Philosophical transactions,* May 26, 1977 279B(963), 288p., Refs.

Knowledge of Antarctica has increased rapidly during the last 20 years. The IGY provided the impetus, and the signing of the Antarc-

tic Treaty in 1961 perpetuated the use of the continent for science by freeing it from political disputes. Perhaps one of the most striking results has been the adoption of measures for the conservation of flora and fauna, which have been introduced before the beginning of any exploitation of the continent, and which can be expected to form a basis for control of any commercial development that might occur in the future. This discussion summarizes research being conducted in the Antarctic in the life, earth, and atmospheric sciences. For abstracts of papers see B-19472-19475, B-20273 through B-20276, E-19476, E-20277, E-20280, F-19477, F-20279, I-19479, I-20283, K-19478, K-19480, K-20281, K-20282, and L-20278.

A-20284

Splettstoesser, J.F., **Polar research,** *Geotimes,* Jan. 1978 28(1), p.41-42.

The 3d Symposium on Antarctic Geology and Geophysics was held Aug. 22-27 at the University of Wisconsin, Madison. 150 papers were presented on the latest developments in antarctic stratigraphy, paleontology, structural geology, marine geology, and other topics. U.S. antarctic programs scheduled for this season include drilling an access hole through the Ross Ice Shelf at site J-9, drilling a 1,000-m hole at Dome C., and making geological and geophysical surveys in coastal areas of Marie Byrd Land. The first International Conference on Iceberg Utilization was held at Iowa State University in Oct.

A-20289

Heuseler, H., **Research in perennial ice** [Forschen im ewigen Eis], *Bild der Wissenschaft,* Apr. 1975 12(4), p.36-45, In German.

DLC Q3.B55

The magazine's team of photographers recorded research activities in the Antarctic for several years. Their color photographs are tied together with a general description of the history and present status of antarctic exploration, highlighting such diverse topics as international cooperation, buildings and research facilities, the discovery of tropical fossils, bacteria found in ice, the detection of uranium, environmental pollution, drilling activities, and others.

A-20310

Harrowfield, D.L., **Maintenance of historic huts in Antarctica,** *New Zealand antarctic record,* 1978 1(1), p.10-11.

The restoration and maintenance of historic huts at Cape Royds, Cape Evans, and Hut Point are briefly described. As part of the "hut caretaker" program during the 1977/78 season, nine days were spent at the Cape Royds hut, twelve days at Cape Evans, and four days at Hut Point making necessary repairs and compiling inventories with photographic records of relics in and about the huts for the Canterbury Museum. All of the structures were found in a good state of preservation.

A-20321

France. Centre national de la recherche scientifique. Laboratoire de glaciologie, **Chronicle of tasks accomplished from Oct. 31, 1971 to Nov. 1, 1972** [Chronique des missions effectuées du 31 octobre 1971 au 1er novembre 1972], Grenoble, 1972, 59p., In French.

The report gives an account, in outline form, of the French Glaciological Laboratory research activities in 1972 in Antarctica, the Kerguelen Islands, and the French Alps. An additional section shows scientists' travel activities visiting foreign colleagues, and attending conferences. Major portions of the work consisted in laying out marker poles on glaciers in Kerguelen and the French Alps and on the cross-country route between Dumont D'Urville and Vostok in Antarctica.

A-20323

Fifty-first annual report on the work of the Scott Polar Research Institute, *Polar record,* Jan. 1978 19(118), p.77-84.

The activities of the Scott Polar Research Institute for the year ending Sep. 30, 1977, are summarized under the following topics: teaching and research, library and information service, international and national activities, finance, and lectures. In addition, grants, visiting scholars, staff and research students, publications, and gifts are listed. Data from radio echo studies of the polar ice sheet during 1974-75 antarctic flights are being analyzed, and improvements are being made in the automatic data processing system and on preparations for the 1977-78 flying season. Newly developed strain recorders will be used to measure strain effects on a floating ice tongue in McMurdo Sound.

A-20326

Scientific Committee on Antarctic Research, **Report of the SCAR executive meeting, Cambridge, UK, 6-7 July 1977,** *Polar record,* Jan. 1978 19(118), SCAR bulletin No.58, Jan. 1978, p.97-102.

The meeting reviewed recommendations from XIV SCAR; approved a composite statement of the SCAR constitution, procedures and structure; considered various matters relating to its national membership; and heard reports or reviewed the activities of various working groups, groups of specialists, symposia, programs, and liaison organizations.

A-20344

Barberot, R., **Neither just acres of snow nor a future Eldorado. France at work at the end of the world** [Ni simples arpents de neige, ni futur Eldorado. Une France du bout du monde au travail], *France. Ministère d'Etat chargé des départements et territoires d'outre-mer. Terres australes et antarctiques françaises,* Jan.-Mar. 1976 No.67, p.5-11, In French.

The advantage to France of her austral and antarctic territories is discussed. In terms of national image they allow their mother country to participate in international research programs with other leading scientific nations such as Great Britain and the Soviet Union. They permit her to have a voice in the disposition of marine resources of the southern seas, so that they may be exploited without depleting stocks unduly. And in the future, the mineral resources of the area may become valuable.

A-20347

Académie des sciences, Paris. Comité national français des recherches antarctiques, **Information bulletin No.59** [Bulletin d'information No.59], *France. Ministère d'Etat chargé des départements et territoires d'outre-mer. Terres australes et antarctiques françaises,* Jan.-Mar. 1976 No.67, p.47-96, In French.

Data gathered at French stations in Terre Adélie, on Kerguelen, Amsterdam and Crozet Islands are presented in tables. Aerological, climatological and magnetic readings are given. News of construction, social events, and scientific activities at each of the French stations are also summarized.

A-20352

Académie des sciences, Paris. Comité national français des recherches antarctiques, **Information bulletin No.60-61** [Bulletin d'information No.60-61], *France. Ministère d'Etat chargé des départements et territoires d'outre-mer. Terres australes et antarctiques françaises,* Aug.-Sep. 1976 No.68-69, p.59-128, In French.

Data gathered at French stations in Terre Adélie, on Kerguelen, Amsterdam and Crozet Islands are presented in tables. Aerological, climatological and magnetic readings are given. News of construction, social events, and scientific activities at each of the stations are also summarized. A short review of the career of Paul-Emile Victor, founder of the French Polar Expeditions, is given to mark his retirement.

A-20353

International Whaling Commission. Committee for Whaling Statistics, **International whaling statistics, No.73,** Oslo, 1974, 50p.

DAS, F HD9469.W5H9

This publication comprises the world aggregate whaling results for 1973, i.e., the catch of the Antarctic pelagic expeditions in 1972-73 season and the catch of other expeditions and shore stations during the 1973 calendar year. After a discussion of whaling quotas and overall catching patterns, the pamphlet sets forth its information in tables: whaling in the antarctic season; Japanese whaling; Soviet whaling; whaling results of other countries; average size of whales caught; whales caught by species, sex, size and whaling ground, listed by nation; average production of oil per BWU; and average oil production per sperm whale.

A-20354

International Whaling Commission. Committee for Whaling Statistics, **International whaling statistics, No.74,** Oslo, 1974, 19p.

This report consists almost entirely of tables. They present: pelagic whaling in the Antarctic, by species, area, month, country, sex and size; production of by-products; size of pregnant females and foetuses; foetus size by species, month, and sex.

A-20377

Buenos Aires. Instituto Antártico Argentino, **Directives for the antarctic summer project CAVIAA 1963-1964** [Directivas para la campaña antártica de verano CAVIAA 1963-1964], Sep. 1963, 17p., In Spanish.

This sets forth the general plan for scientific activities for the Argentine team for the summer season, 1963-64, and lists the personnel to serve in each of the three working groups. The first group was assigned to geological and paleontological studies, the second group to glaciology and topography near Belgrano Station, and the third to blood sampling and microbiological and immunological research on antarctic birds. An appendix outlining procedure for blood sampling and storage of samples is included.

A-20400

Anderson, P.J., **Antarctica,** Encyclopedia Britannica 1978 Book of the year, Chicago, Encyclopedia Britannica, 1978, p.183-184.

This article briefly summarizes the 1976-77 field season in Antarctica, listing the nations taking part in research and mentioning the highlights of the program of each country. International research programs are also reported on.

A-20418

Antarctic summer season 1971-72 [Campagne d'été 1971-72 dans l'Antarctique], France. Centre National de la Research Scientifique. Laboratoire de Glaciologie. Rapport d'activité 1972, Grenoble, [1973?], p.7-10, In French.

This brief report describes the misfortunes which attended the French expedition both on the continent and at Kerguelen. An aircraft accident near Dumont D'Urville, which fortunately cost neither lives nor injuries, delayed all activities by three weeks. Blizzards, white out, low temperatures, and sastrugi further hampered the operation. On Kerguelen, the weather was no better and caused much delay and hardship.

A-20433

Watanabe, H., **First landing at Ongul Island** [Kichi o izuko ni], *Polar news (Kyokuchi),* July 27, 1978 No.27, p.13-16, In Japanese.

The author was a member of the first JARE and the leader of the sledging party that made the reconnaissance survey on Ongul Island to locate a suitable site for Showa Station. He recounts the problems and victories of those early days.

A-20434

Morita, Y., **Abortive attempt at wintering** [Maboroshi no ettotai], *Polar news (Kyokuchi),* July 27, 1978 No.27, p.17-25, In Japanese.

In January of 1958 the wintering party of the second JARE planned to land at Showa Station. The group was led by M. Murayama and consisted of 20 members; it carried 430 tons of supplies. The sea ice around Enderby Land was too thick to traverse. One propeller blade on the icebreaker *Showa* was damaged, so she had to request relief from the U.S. icebreaker *Burton Island.* Weather conditions precluded the landing of even a skeleton six-man team and their nine tons of supplies, so that wintering for 1958 had to be abandoned.

A-20437

Asahina, K., **An expedition newspaper, *Antarctic News*** [*Nankyoku-Shinbun* no koto], *Polar news (Kyokuchi),* July 27, 1978 No.27, p.34-37, In Japanese.

A small newspaper *Nankyoku-Shinbun* was published aboard the icebreaker *Showa* during the voyage of the 1st JARE. It was mimeographed on both sides of B4-size pulp paper and was issued through No.102. Communication between ship's crew and expedition members was greatly improved by the newspaper, which carried news, notices and a duty diary. Back issues of the paper dating from October 1957 have been published by Kanda Meikeido.

A-20440

Kaminuma, K., **Report on the 3rd Symposium on Antarctic Geology and Geophysics** [Dai 3 kai Nankyoku chishitsu chikyu-butsuri], *Polar news (Kyokuchi),* July 27, 1978 No.27, p.47-49, In Japanese.

The U.S. National Academy of Sciences hosted the 3rd Symposium on Antarctic Geology and Geophysics at the University of Wisconsin in Madison in August of 1977. More than 150 papers were presented, and more than 200 scientists participated. Six Japanese scientists attended and four presented papers, one on the East Antarctic shield, two on crustal structure, and one on Cenozoic history. Following the symposium, the meetings of SCAR working groups on geology and solid state geophysics were conducted. The author and Y. Yoshida, both of the National Institute of Polar Research, attended these meetings.

A-20441

Fukunishi, H., **IAGA/IAMAP joint meeting** [IAGA simposium], *Polar news (Kyokuchi),* July 27, 1978 No.27, p.50-57, In Japanese.

The assemblies of the International Association of Geomagnetism and Aeronomy and the International Association of Meteorology and Atmospheric Physics were held jointly at the University of Washington, Seattle, from Aug. 22 to Sept. 3, 1977. Approximately 1000 scientists from 60 nations attended; 53 were from Japan. Observational results from Antarctica were discussed primarily at the session

entitled "An International Meteorological Society interim report for Antarctica", chaired by Professor Nagata, director of the National Institute of Polar Research.

A-20442

Yoshida, Y., **Working with the British Antarctic Survey** [Igirisu-tai ni Sanka Site], *Polar news (Kyokuchi),* July 27, 1978 No.27, p.57-62, In Japanese.

This is the narrative of a geomorphologist from the National Institute of Polar Research, in Tokyo, who joined the British Antarctic research vessel *Bransfield* for a cruise to Palmer Station and the Argentine Islands. He describes the cruise itself, their visits to the stations, and the structure of the BAS and the organization of the expedition.

A-20520

Bertin, M.A., **Look at the Japanese Polar Research Program,** *U.S. Office of Naval Research. Scientific bulletin,* Mar. 1977 2(1), p.43-44. ADA-038 906.

This is a short history and review of the Japanese Polar Research Program which began with the International Geophysical Year. The establishment of Showa Station and Mizuho Camp is discussed and international programs in which the Japanese participate listed.

A-20562

Norwegian Academy of Science and Letters. Norwegian National Committee on Polar Research, **Report to SCAR on Norway's antarctic research activities October 1977-September 1978; Norway's antarctic research activities planned for October 1978-September 1979,** Oslo, June 1978, 6p., 10 refs.

Participation of Norway's 1977-78 summer expedition in the Ross Ice Shelf Project was cancelled due to premature closing of the RISP access hole. Research activities for 1978-79 will include the following fields of study: meteorology, glaciology, topography, hydrography, oceanography, terrestrial biology, geology and geophysics, and marine biology, geology and geophysics. Two cruises are planned aboard M/V *Polarsirkel.*

A-20575

Gwynne, P., **To Antarctica with love,** *Technology review,* July/Aug. 1974 76(8), p.4-5.

The author discusses the various resources Antarctica may have to offer and the need for harvesting them wisely. Whales and seals were recklessly used in the past, but adequate research into their breeding and distribution may allow these animals to be taken in economically viable numbers without threatening them with extinction. The same is true of krill, a small crustacean that can be processed for food.

A-20578

Bauer, E.A., **Race is on for Antarctica,** *International wildlife,* Nov./Dec. 1974 4(6), p.42-47.

The author travelled to Antarctica to photograph wildlife. He surveys the numerous species that inhabit both land and sea and briefly explains the remarkable productivity of the Southern Ocean. In view of the economic potential of many antarctic species, he feels the area could be best protected from over-exploitation by the establishment of an international park.

A-20587

New Zealand. Department of Scientific and Industrial Research. Antarctic Division, Mead, K.L., comp, **Bibliography of N.Z.A.R.P. publications 1956-1976,** Christchurch, 1978, 184p.

This bibliography comprises 1042 references to papers by New Zealand and overseas authors whose research projects were carried out under the aegis of the New Zealand Antarctic Research program. The material is arranged under thirteen subject headings, based on those used by the *Antarctic Bibliography.* Within each section, items are arranged alphabetically by first author. An author index is provided. To ensure that the bibliography remains current, supplements will be issued on an annual basis.

A-20588

New Zealand. Department of Scientific and Industrial Research. Antarctic Division, Mead, K.L., comp, **Bibliography of international dry valley publications, 1907-1977,** Christchurch, 1978, 162p.

This bibliography comprises 799 references to papers by authors from all Antarctic Treaty nations who have carried out research in the dry valleys region of Antarctica. The material is arranged under sections according to primary scientific subject content. Within each section, items are arranged alphabetically by author surname. An author index is provided. To ensure that the bibliography remains current, supplements will be issued on an annual basis.

A-20595

Gwynne, P., **Get ready Antarctica—here comes the boom,** *International wildlife,* Nov.-Dec. 1977 7(6), p.4-10.

After a brief review of the importance of Antarctica to the scientist, the author discusses its potential for economic exploitation. He considers mineral and petroleum deposits, fresh water, and marine resources. The problems these future uses pose for diplomats desiring to work out an international arrangement to protect the continent from ruin are also suggested.

A-20607

Shifilov, F.D., **At the poles** [U poliusov zemli], Moscow, Izobrazitel'noe iskusstvo, 1976, 30 cards.

This is a collection of 30 commemorative color postcards concerned with Soviet accomplishments in arctic and antarctic exploration and research. Each card has a paragraph on the reverse side to describe the photograph. The series includes scenes of stations, drift stations, conquests of both poles, and a number of ships, from the earliest days of polar sailing to the present.

A-20608

Treshnikov, A.F., **Research vessels carry their names** [Ikh imenami nazvany korabli nauki], Leningrad, Gidrometeoizdat, 1978, 224p., In Russian.

The outstanding Soviet scientists after whom three of the nation's polar research vessels are named are the subject of this book. Divided into three sections, the volume gives a personal biography, a detailed discussion of the scientific contribution, and a description of the vessel commemorating each man. At the end is a collection of photographs.

A-20609

Somov, M.M., **On the earth's domes** [Na kupolakh zemli], Leningrad, Lenizdat, 1978, 351p., In Russian.

This is a collection of sketches, reminiscences and articles by the eminent Soviet oceanographer M.M. Somov. Long associated with arctic research, Somov accompanied the first Soviet Antarctic Expedition, raised the flag over Mirnyy Station, and commanded the first group to penetrate the continent's central area. The memoirs are illustrated with numerous photographs.

A-20610
Treshnikov, A.F., Shamont'ev, V.A., **Current status of arctic and antarctic research and prospects for further development** [Sovremennoe sostoianie issledovaniĭ v Arktike i Antarktike i perspektivy ikh dal'neĭshego razvitiia], *Problemy Arktiki i Antarktiki,* 1978 No.54, p.5-15, In Russian.

The scientific and engineering activities of the Arctic and Antarctic Institute in Leningrad for 1971-75 are reviewed; the aim of this program is to investigate fully the natural conditions and resources of southern and northern polar regions. The main scientific concern of the Institute during the 10th 5-Year Plan is to study large-scale variations in the hydrometeorological regime around both poles. From 1976-1980 its area of concentration will be prediction of changes in the environment and natural phenomena and hydrometeorological support for arctic navigation. The POLEX program will remain a top priority.

A-20693
Stackpole, E.A., **Whales and destiny: the rivalry between America, France, and Britain for control of the Southern Whale Fishery, 1785-1825,** [Amherst], University of Massachusetts Press, 1972, 427p.

DLC SH383.S7

The Revolutionary War disrupted the southern whaling trade, which originated largely on Nantucket Island. In the commercial chaos and rivalries which marked the ensuing years, the New World whalers languished for want of European markets, while the British and French strove to lure the experienced whalers back so that they could control both supply and demand. The imposing Royal Navy viewed with alarm the growing fleet sailing the American flag; and seizures on the high seas, which led to the War of 1812, included whaling ships and their crews. This book traces the commercial, military and diplomatic course of this international competition for the lucrative Southern Whale Fishery.

A-20702
Orheim, O., **Back to the Antarctic: new methods introduced by Norway's first large expedition in 16 years,** *Research in Norway,* 1977, p.2-8.

The research program of Norway's first large expedition in 16 yr was planned with emphasis on modern marine science within the pack ice zone. Support was provided by the Norwegian icebreaker, M/V *Polarsirkel,* which was equipped with a series of research laboratories. The program ashore in Dronning Maud Land included meteorological studies of the geology and paleomagnetism of the mountains, biological investigations of cold adaptation in Collembola and and mites, and environmental toxicology in bird samples. The shipboard program introduced new techniques and instruments to the Weddell Sea and in some cases, to the Antarctic. Most of the work was done in the fields of oceanography and marine geophysics, with smaller studies in marine geology and marine biology on sea ice and on the ice shelf. The marine biology program was largely a study of krill. An automatic weather station was set up during a 3-day visit to Bouvet I. A history of Norway in the Antarctic is outlined.

A-20712
Zegarelli, P.E., **Antarctica,** *Focus,* Sep.-Oct. 1978 29(1), p.1-9.

This overview of Antarctica treats its environment, climate, history, scientific exploration, natural resources, geologic history and the Antarctic Treaty. Antarctica's resources are of growing interest. Mineral prospects include coal, oil and gas, iron, uranium, and manganese nodules. Of the living resources krill is the source of major current interest. A map of Antarctica, one depicting territorial claims, and a drawing of the Gondwanaland land masses are provided.

A-20717
New Zealand. Department of Scientific and Industrial Research. Antarctic Division, **New Zealand antarctic research programme 1978-1979 and report of 1977-78 programme,** Christchurch, Aug. 1978, 17p.

This booklet discusses the following aspects of the N.Z.A.R.P.: planning and operations, Scott Base facilities, transport, research activities, 1978-79 field events, historic hut restoration, events conducted during the 1977-78 summer and 1978 winter, and future activities. Research is being conducted at Scott Base, Arrival Heights, Cape Royds, Cape Bird, and Vanda Station. Scott Base is being rebuilt.

A-20735
Sovetskaia antarkticheskaia ekspeditsiia, Sen'ko, P.K., ed, **Eighteenth Soviet Antarctic Expedition. Seasonal research 1972/73. General description** [Vosemnadtsataia sovetskaia antarkticheskaia ekspeditsiia. Sezonnye issledovaniia 1972/73. g. Obshchee opisanie], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1978 Vol.68, p.1-70, In Russian.

This overview of the 18th SAE is divided into three sections. First, administrative and logistic aspects of the expedition are described. Then scientific efforts based on board the *Ob'* and the *Professor Zubov,* such as aerometeorological study, satellite observations, ice studies, oceanographic research and vessel hull vibration investigations, are summarized. The third section is devoted to land-based scientific operations such as glaciological field work, botanical studies around Bellingshausen Station, and airfield construction at Molodezhnaya.

A-20760
Scientific Committee on Antarctic Research, **Documents of the 15th meeting,** May 1978, 167p., Draft.

This collection contains information on the meeting itself (lists of delegates, agenda, etc.) and 34 documents relating to the work of the committee and its working groups. Reports of all the working groups, financial statements, recommendations from the 14th meeting, reports of specialists' meetings, and reports from other groups, such as WMO, to SCAR are included.

A-20761
Sovetskaia antarkticheskaia ekspeditsiia, **Eighteenth Soviet Antarctic Expedition. Winter research 1972-1974** [Vosemnadtsataia sovetskaia antarkticheskaia ekspeditsiia. Zimovochnye issledovaniia 1972-1974 gg.], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1978 Vol.67, p.7-34, In Russian.

This overall description of the winter portion of the 18th SAE is divided into three sections. The first, general questions of expedition activity, deals with logistics and international contacts. The second, concerning engineering and construction work, covers problems of power supply, surface transport, radio communication, air operations and construction and repair activities. The third summarizes organization and methods of research in atmospheric studies, geophysical and medical research, as well as the exchange programs with the United States.

A-20792
Birkenmajer, K., **Polish antarctic activities 1976-78,** *Polar record,* May 1978 19(119), p.173-175.

The first permanent Polish scientific station in the Antarctic, the H. Arctowski Station, was opened on Feb. 26, 1977. The station is located on the west coast of Admiralty Bay in the South Shetland Is. The activities of the 1976-77 and 1977-78 expeditions are described.

Research was conducted in the fields of biology, oceanography and marine biology, human physiology, meteorology and climatology, glaciology, geomorphology, geology and geophysics.

A-20793

Horning, D.S., **Australian Museum Macquarie Island Expedition, 1977-78,** *Polar record,* May 1978 19(119), p.175-176.

The Australian Museum supported a team of four biologists during the 1977-78 season at Macquarie I. An extensive survey of marine algae and invertebrates from the intertidal zone, and down to depths of 20 m along the coastline, was a major objective of the marine program. The terrestrial ecology program included studies of microscopic terrestrial invertebrates, especially tardigrades or water bears, cryptogam (particularly hepatics, lichens and mosses) and vascular plant collections, and the recovery of sea-bird ectoparasites.

A-20800

Japan. Science Council. National Antarctic Committee, **Japanese antarctic research 1978 report,** Tokyo, June 1978, 38p., Refs. p.15-24.

This report outlines the scientific research completed at Showa Station from Feb. 1977 to Jan. 1978, and on board the icebreaker *Fuji* during the relief expedition to Showa in the 1977-78 summer. Scientific research completed in and around the McMurdo Sound region is included, as well as a tentative program of proposed research for the period Nov. 1978 to Jan. 1980 at Showa, Mizuho Station, and aboard the *Fuji,* and for the summer of 1978-79 in the McMurdo area.

A-20808

Maksimov, S.I., Sorokina, E.L., **Preparing vitamin A from *Notothenia marmorata* liver by an improved method of alkaline hydrolysis** [Poluchenie preparata vitamina A iz pecheni mramornoĭ nototenii uluchshennym sposobom shchelochnogo gidroliza], *Rybnoe khoziaĭstvo,* Mar. 1972 No.3, p.65-67, In Russian.

Notothenia marmorata liver is an excellent source of vitamin A in a fatty medium. The results of a trial with an hydrolysis process for the extraction of this product are given. A yield of 75.5% of total vitamin A content is obtained.

A-20810

Zakharova, L.A., **Processing *Notothenia marmorata* roe** [Obrabotka molok nototenii mramornoĭ], *Rybnoe khoziaĭstvo,* Jan. 1971 No.1, p.65-67, In Russian.

Antarctic icefish roe are large and commercially attractive. They should be removed from the fish and quick-frozen within five hours after catching. This article gives several recipes for preparing the roe—frying them, marinating and wrapping them in pastry, and combining them with vegetables.

A-20811

Anikeev, N.E., **Efficient method of filleting toothfish and other large fish** [Ratsional'nyĭ sposob razdelki klykacha i drugikh krupnykh ryb], *Rybnoe khoziaĭstvo,* Jan. 1970 No.1, p.54-55, In Russian.

A method for assembly-line cleaning and filleting of large (10-30 kg) fish such as the antarctic toothfish *Dissostichus mawsoni* is described and illustrated.

A-20812

Makarov, O.E., **Technological and chemical characteristics and utilization of *Notothenia rossi marmorata*** [Tekhnokhimicheskaia kharakteristika i ispol'zovanie mramornoĭ nototenii], *Rybnoe khoziaĭstvo,* Nov. 1968 No.11, p.64-65, In Russian.

Specimens of *Notothenia rossi marmorata* were studied to determine characteristics important in processing them for sale. Percentages of various parts of the fish—liver, bones, meat, roe, etc.—are given and chemical composition (water, fat, protein, ash) of both fresh and frozen fish computed. Losses and waste during processing and other aspects of the commercial utilization of antarctic fish are discussed.

A-20818

Great Britain. Natural Environment Research Council 1965-1975, **Land, air and sea—research in man's environment,** London, 1975, 48p.

DLC TD171.5.G7G725

The Natural Environment Research Council has been in existence for 10 yr, long enough to have established broad lines of procedure and a general philosophy of research. This booklet provides a general review of progress in the main fields for which the Council is responsible. The approach is selective rather than comprehensive, necessarily with emphasis on topics of particular social relevance and public interest. NERC funding (pounds sterling 29.7 million in 1975-1976) breaks down to 30.8% for physical oceanography, marine biological sciences and research, and vessel support; 24.1% for the Earth sciences; 4.9% for freshwater sciences; 8.3% for terrestrial life sciences; 11.2% for Antarctic Research; 8.7% for headquarters and centrally funded projects; 6.5% for research grants; and 5.5% for postgraduate training awards. The British Antarctic research is described. (Auth.)

A-20826

Iwabuchi, M., Fujii, R., Utsumi, T., **Conversational system of spectrum analysis by the use of graphic display,** *Antarctic record,* Sep. 1978 No.62, p.29-70, In Japanese with English summary. 10 refs.

A spectral analysis system was devised, using the computer HITAC M-160 II and a graphic display terminal, in order to analyze efficiently various kinds of wave data observed in antarctic research, such as magnetic pulsations, natural electromagnetic waves, seismological waves and meteorological phenomena. The greatest merit of the system is that it can analyze one- or two-dimensional time series data trial and error by the use of the graphic display terminal. From the long original data one can choose a part of the data for analysis, and freely use several kinds of filters and spectral methods. Generally used spectral methods, Blackman-Tukey, Fast Fourier Transform and Maximum-Entropy Method and the Chebyshev-filters, high-pass, low-pass, band-pass and band-reject are available. In this paper, the system is outlined, and the spectral and filtered results of test data are given and discussed. (Auth.)

A-20828

Hoshiai, T., **Report of the wintering party of the Japanese Antarctic Research Expedition in 1975-1976,** *Antarctic record,* Sep. 1978 No.62, p.80-98, In Japanese with English summary. 3 refs.

Research was conducted by JARE-16 at Showa Station from Feb. 1975 to Jan. 1976 in the following disciplines: aurora, geomagnetism, the ionosphere, meteorology, oceanography, seismology, cartography, geology, geomorphology, geochemistry, biology, and medical science. Three field parties carried out geological, geomorphological and biological observations in the ice-free areas along the Soya Coast, an oversnow traverse for geological and geodesical surveys was conducted in the Yamato Mts., 307 meteorites were collected in this area,

and snow sampling for chemical analysis was done at Mizuho Station and enroute to Showa. An aerophotographical survey revealed an Emperor penguin rookery on the sea ice of the east coast of the Liiser-Larsen Peninsula; a population census was made of Adelie penguins and Weddell seals.

A-20829

Kaminuma, K., **Field surveys on Cape Ryugu, East Antarctica in 1977-1978,** *Antarctic record,* Sep. 1978 No.62, p.99-120, In Japanese with English summary.

The principal scientific aims of the JARE-19 summer field party at Cape Ryugu (Dec. 30, 1977 to Jan. 14, 1978) were topographic and geological mapping. Biological and geophysical surveys were also planned. The party succeeded in establishing ten topographic control points, one astronomical station, and six gravity stations. Fundamental geological and biological surveys were made throughout the Cape Ryugu ice-free area. A report on the logistics of the field party, and a summary of the field survey are given.

A-20830

Iwabuchi, M., Sakurai, H., Miyamoto, K., **Construction of polar data-base system,** *Antarctic record,* Sep. 1978 No.62, p.121-131, In Japanese with English summary. 6 refs.

A polar data-base system, utilizing the HITAC M-160 II computer, has been constructed at the National Institute of Polar Research. The system consists of three kinds of data: data obtained by the Japanese Antarctic Research Expedition, digital world map data including antarctic maps, and antarctic bibliography data. Users can combine the two kinds of data by the use of Fortran language. Some examples of combination are shown. (Auth.)

A-20833

Uses of Antarctica, *Search,* Nov.-Dec. 1977 (11/12), p.386-387.

Discussions held during the 48th ANZAAS Congress (Melbourne, Aug. 29-Sep. 2, 1977) Symposium on the Exploitation of Antarctic Resources are briefly summarized. The symposium provided an opportunity for a survey of the resources, as well as some consideration of the political situation. The topics discussed included: mineralogy and the logistics problems associated with mining, land transportation, docking and shipping minerals; ice exploitation; antarctic living resources, particularly krill, and management policies; tourism; nuclear waste disposal; and the politics of Antarctica.

A-20858

U.S. National Science Foundation, **Antarctic journal of the United States, Vol.13, No.3,** Washington, D.C., Sep. 1978, 16p.

This issue of the Antarctic journal summarizes the activities of the U.S. antarctic research program and planned field research projects for 1978-79, lists NSF antarctic awards made from Apr. 1 to June 30, 1978, gives a monthly antarctic climate summary, outlines the policy set for use of remote sensing and announces plans for an international project, initiated by New Zealand in McMurdo Sound. Publication of the Mar. and June 1978 issues have been delayed. Highlights of the U.S. program will include the first intensive examination of Byrd and Darwin Glaciers, the final season of the Ross Ice Shelf Project, and expanded investigations of krill and the biomass of the southern oceans. Field research will be conducted on the Antarctic Peninsula, at Darwin Glacier, Dome C and the Dufek intrusion, at McMurdo Station and vicinity, at several remote sites, on the Ross Ice Shelf, at Siple and Amundsen-Scott Stations, and in southern Victoria Land.

A-20864

Thomson, D., **Scott's men,** London, Allen Lane, 1977, 331p., Refs. p.317-319.

DLC G850 1910.S93

This narrative represents a group biography of Scott and his companions on the antarctic expeditions of 1901-04 and 1910-13. It tells of the race between Amundsen and Scott to the South Pole and the death of Scott and his four companions in the attempt to return to their base. The character studies include Scott's ill-fated companions, Edward Wilson, Oates, Birdie Bowers, and Edgar Evans; his rivals, Amundsen and Shackleton; Clements Markham, his discoverer; and his wife, Kathleen.

A-20869

Il'ichev, E.F., **Using krill meal as feed** [Ispol'zovanie muki iz krilia na kormovye tseli], *Rybnoe khoziaĭstvo,* Jan. 1966 No.1, p.71-72, In Russian.

The chemical composition of krill meal is discussed. It was tried as a feed for hogs, to whom it was fed right up to slaughter time. Results were very satisfactory; weight gain and health of the animals were good and the pork had no fishy taste.

A-20887

Stäblein, G., **Traditions and current tasks of polar research** [Traditionen und aktuelle Aufgaben der Polarforschung], *Erde,* 1978 109(2), p.229-267, In German with English summary. Refs. p.263-376.

Today arctic and antarctic research is less popular than at the time of the last voyages of discovery. The history of German polar research and the support given to it by the Berlin Geographical Society are described. The attempt is made to order the phases of development of polar research according to its changed aims and methods. An indication of current polar research activities is given by means of a selection of descriptions by various polar research institutions of themselves and their programs. (Auth. mod.)

A-20916

Wallace, W., **James Murray, F.R.S.E., 1865-1914—a belated biography,** Royal Society of Edinburgh. Year book, Edinburgh, Scotland, 1976, p.15-20.

DLC Q41.E23

The life and works of James Murray, biologist on Shackleton's Antarctic Expedition, 1907-1909, are summarized. Murray's principal research was devoted to the study of freshwater flora and fauna, particularly, collecting and describing species of *Rotifera* and *Tardigrada.* Shackleton left Murray in charge of the base at Cape Royds when he set off for the South Pole, during which time a number of biological collections were made. The results of his work in the Antarctic and elsewhere have resulted in a number of publications. James Murray perished in the Arctic along with three companions (their bodies were never found) while serving as an oceanographer with the Stefansson Canadian Arctic Expedition.

A-20917

Mason, T.K., **On the ice in Antarctica,** New York, Dodd, Mead & Co., 1978, 160p.

DLC G863.M37

A volunteer for the Navy's *Operation Deep Freeze* provides an account of present-day Antarctica, including information about the exploration of the continent and its geology, ecology, and role in scientific research. The book is intended for the young reader.

A-20920

Anderson, P.J., **The other Richard E. Byrd: naval officer,** *Retired officer magazine,* Nov. 1978 34(11), p.22-24.

The life and exploits of Rear Adm. Richard E. Byrd are described. Adm. Byrd received the Medal of Honor for his successful flight to the North Pole on May 9, 1926. Between 1928 and 1935, he led two privately financed expeditions to Antarctica. He became the first man to fly over the South Pole on Nov. 25-26, 1929. In 1934, during the second expedition, Byrd almost died from poisoning by fumes

from a faulty stove when he lived alone in a small hut from late Mar. to mid-Aug. He was appointed commanding officer of the U.S. Antarctic Service, and established two bases in Antarctica in 1939 and 1940. *Operation Highjump,* the largest expedition ever sent to Antarctica, was created through his efforts. Byrd received the Medal of Freedom for his outstanding accomplishments as Officer in Charge of the U.S. Antarctic Programs (1955-57) and his humanitarian contributions.

A-20921

Académie des sciences, Paris. Comité national français des recherches antarctiques, **Report No.10 to SCAR. Summary of scientific activities in 1967 and 1968 and of scientific research programs for 1969** [Rapport No.10 au Comité scientifique pour la recherche antarctique. Sommaire des activités scientifiques des années 1967, 1968 et des programmes de recherches scientifiques pour l'année 1969], *Académie des sciences, Paris. Comité national français des recherches antarctiques. Report to SCAR,* June 1968 No.10, 51p., In French. Refs. p.45-51.

DLC QC994.9.C65

French research efforts for the period 1967-1969 are discussed under four headings: biological sciences; atmospheric physics; earth sciences; and upper atmospheric physics. A bibliography of the papers produced by researchers during the period is appended.

A-20922

Académie des sciences, Paris. Comité national français des recherches antarctiques, **Report No.16 to SCAR. Scientific activities from Mar. 1973 to Apr. 1974, research programs in progress (Apr. 1974-Dec. 1974) and projected (Dec. 1974-Dec. 1975)** [Rapport No.16 au Comité scientifique pour la recherche antarctique. Activités scientifiques de mars 1973 à avril 1974, programmes de recherches en cours (avril 1974-décembre 1974) et prévus (décembre 1974-décembre 1975)], *Académie des sciences, Paris. Comité national français des recherches antarctiques. Report to SCAR,* June 1974 No.16, 56p., In French. Refs. p.47-56.

DLC QC994.9.C65

Discussion of French antarctic research efforts is divided into four sections: biological sciences (animal, plant, and human); earth sciences; atmospheric physics; and upper atmosphere studies. Papers produced during the period are listed.

A-20923

Académie des sciences, Paris. Comité national français des recherches antarctiques, **Report No.17 to SCAR. Scientific activities from Mar. 1974 to Apr. 1975, research programs in progress (Apr. 1975-Dec. 1975) and projected (Dec. 1975-Dec. 1976)** [Rapport No.17 au Comité scientifique pour la recherche antarctique. Activités scientifiques de mars 1974 à avril 1975, programmes de recherches en cours (avril 1975-décembre 1975) et prévus (décembre 1975-décembre 1976)], *Académie des sciences, Paris. Comité national français des recherches antarctiques. Report to SCAR,* June 1975 No.17, 54p., In French. Refs. p.49-54.

DLC QC994.9.C65

Discussion of French antarctic research efforts is divided into four sections: biological sciences (animal, plant, and human); earth sciences; atmospheric physics; and upper atmosphere studies. Papers produced during the period are listed.

A-20924

Académie des sciences, Paris. Comité national français des recherches antarctiques, **Report No.19 to SCAR. Scientific activities from Mar. 1976 to Apr. 1977, research programs in progress (Apr. 1977-Dec. 1977) and projected (Dec. 1977-Dec. 1978)** [Rapport No.19 au Comité scientifique pour la recherche antarctique. Activités scientifiques de mars 1976 à avril 1977, programmes de recherches en cours (avril 1977-décembre 1977) et prévus (décembre 1977-décembre 1978)], *Académie des sciences, Paris. Comité national français des recherches antarctiques. Report to SCAR,* June 1977 No.19, 64p., In French. Refs. p.55-64.

DLC QC994.9.C65

Discussion of French antarctic research efforts is divided into four sections: biological sciences; earth sciences; atmospheric physics; and upper atmosphere studies. Voyages 9-16 of the oceanographic vessel *Marion Dufresne* are reported. Papers produced by the participants in 1977 programs are listed.

A-20929

Cousteau, J., **Reasonable utopias,** *Sierra Club bulletin,* June 1976 61(6), p.25-27.

The author makes a plea for international cooperation to preserve the Antarctic from tourism, mineral exploration, overfishing and whaling, and other forms of human interference in its delicate ecosystem. Citing a number of types of damage he witnessed in his antarctic travels, such as penguins poisoned by pesticides, litter from scientific stations, and a near-absence of large whales, he begs that this continent and others less isolated not be allowed to go the way of the Sahara Desert or Arabia Felix, both of which were at one time fertile, until man overgrazed and ruined them.

A-20938

Freytag, G., **Space conference in Konstanz—Scientific results on fisheries** [Weltraumtagung in Konstanz—Ergebnisse für die Fischereiwissenschaft], *Informationen für die Fischwirtschaft,* 1973 20(4/5), p.136-138, In German.

Activities of the 16th Symposium of the Committee on Space Research (COSPAR), May 23-June 5, 1973, are briefly described. Out of 33 papers, 5 were on biology, including a description of krill from antarctic waters, and a discussion of marine mammals in Antarctica.

A-20939

Fischer, W., **Methods of Soviet krill fisheries** [Metodik der sowjetischen "Krill"-Fischerei], *Informationen für die Fischwirtschaft,* 1974 21(2), p.60-61, In German. 2 refs.

Since 1962 the USSR has been systematically exploiting krill in the Scotia and Weddell Seas. Equipment for catching and processing krill is briefly described. An examination of the amount of krill caught by the Soviet Union annually (approx 100 million tons) indicates that no harm is done to the standing crop.

A-20940

Fischer, W., **News about krill** [Neues zum "Krill"], *Informationen für die Fischwirtschaft,* 1974 21(4/5), p.124, In German. 2 refs.

Enormous resources of krill are located in antarctic waters. Argentina, Australia, Germany, England, France, Japan, New Zealand, Norway, the Soviet Union and the USA are interested in catching krill as a source of protein-rich produce. Refuting the assumption that krill could be caught only during the austral summer, the Soviet Union started fishing in winter, N and NE of South Georgia.

A-20941
Fischer, W., **News about krill Pt.2** [Neues zum Krill (2)], *Informationen für die Fischwirtschaft,* 1975 22(1), p.24-26, In German.

The amount of krill caught by Japan and the Soviet Union in the 1974-75 season as well as the equipment for catching krill are discussed.

A-20942
Hamburg, Federal Republic of Germany. Bundesforschungsanstalt für Fischerei, **First krill expedition of the Federal Republic of Germany to antarctic waters** [Erste Krill-Expedition der Bundesrepublik Deutschland in antarktische Gewässer], *Informationen für die Fischwirtschaft,* 1975 22(5), p.121-122, In German.

On Oct. 20, 1975, the German research vessel *Walther Herwig* and the commercial fishing ship *Weser* were, for the first time, sent to the South Atlantic Ocean for about eight months to study resources, biological properties, catching techniques and processing of antarctic krill.

A-20946
Tokyo. National Institute of Polar Research, **National Institute of Polar Research, Tokyo, Japan,** Oct. 1978, 15p.

This illustrated booklet provides information on the major functions, organization, research activities, staff and budget of the National Institute of Polar Research, and lists publications resulting from antarctic research. The 19th JARE (1977-79) currently occupies both Showa and Mizuho Stations, conducting research on upper atmosphere physics and participating in the International Magnetospheric Study (IMS), which was started in 1975. In addition, on-going research includes the following fields: geomagnetism, ionosphere, meteorology, earthquakes, ocean tides, geodesy, geography, geology, geochemistry, glaciology, biology, and medical science.

A-20962
Hamburg, Federal Republic of Germany. Bundesforschungsanstalt für Fischerei, **First segment of the Antarctic Expedition completed** [Erster Abschnitt der Antarktis-Expedition beendet], *Informationen für die Fischwirtschaft,* 1976 23(1), p.3, In German.

Results of krill research carried out by the *Walther Herwig* and *Weser* in the South Atlantic Ocean in the 1975-76 season are reported. The catch of krill reached 30 tons per hour, most from the surface to 20-40 m deep.

A-20963
Hamburg, Federal Republic of Germany. Bundesforschungsanstalt für Fischerei, **First information about the second segment of the antarctic voyage** [Erste Informationen über den 2. Abschnitt der Antarktisreise], *Informationen für die Fischwirtschaft,* 1976 23(2), p.35-36, In German.

The second part of the German antarctic krill expedition to the Weddell Sea was completed by the *Walther Herwig* and *Weser* in Jan.-Mar. 1976. Biological and hydrographic research, of significance to krill fisheries, was carried out. The present note gives a general account of the operation.

A-20964
Hamburg, Federal Republic of Germany. Bundesforschungsanstalt für Fischerei, **First German krill expedition to the Antarctic completed** [Erste deutsche Krill-Expedition in die Antarktis beendet], *Informationen für die Fischwirtschaft,* 1976 23(3), p.67-68, In German.

On June 14, 1976, the R/V *Walther Herwig* and fishing vessel *Weser* returned to Bremerhaven after eight months in the South Atlantic Ocean for krill research and processing. Some krill samples were taken to laboratories for tests.

A-20966
Kock, K.-H., **Studies on possible game fish resources *(Dissostichus eleginoides* and *D. mawsoni)* in the antarctic sector of the Atlantic Ocean** [Untersuchungen über mögliche Nutzfischbestände im atlantischen Sektor der Antarktis: *Dissostichus eleginoides* and *D. mawsoni*], *Informationen für die Fischwirtschaft,* 1976 23(6), p.160-165, In German. 3 refs.

In addition to krill studies, the German Antarctic Expedition examined antarctic fishes *Dissostichus eleginoides* and *D. mawsoni* during the 1975-1976 summer. Data on geographic distribution, nutritional quality, morphology, size and total resources are given.

A-20968
Kock, K.-H., **Krill catch in the Atlantic sector of the Antarctic** [Krillfänge im atlantischen Sektor der Antarktis], *Informationen für die Fischwirtschaft,* 1977 24(1), p.8-12, In German.

Results of krill catches made by the German Antarctic Expedition in 1975-1976 are reported. The amounts are shown in six charts representing 3 legs of the voyages by the 2 vessels: 1) the eastern Scotia Sea and waters around South Georgia, 2) around the South Shetland Islands, the northern Weddell Sea and west of the Antarctic Peninsula, and 3) around South Georgia, the South Sandwich Islands, the Scotia Sea, and east to waters southwest of the African continent.

A-20983
Global Atmospheric Research Programme (GARP). WMO-ICSU Joint Organizing Committee, Baker, D.J., Jr., ed, **Polar sub-programme,** *World Meteorological Organization. GARP publications series,* Mar. 1978 No.19, 47p., In English with French, Russian, and Spanish summaries. Numerous refs.

Processes in the polar regions present special problems to GARP. The Polar Sub-programme is an attempt to address these problems within the terms of reference of the First GARP Global Experiment (FGGE) and the Climate Dynamics Sub-programme. The objectives of the Polar Sub-programme are: 1. To identify and study processes of particular importance in the polar regions relating to the improvement of weather prediction from general circulation models (GARP first objective); 2. To develop a basis for understanding the role of ice in climate dynamics through (a) parameterization of sea ice dynamics and related atmospheric and oceanic processes in climate models, and (b) establishment of an appropriate information base for studies of the role of sea ice and polar continental ice masses in climatic change (GARP second objective). These objectives will be met through a Polar Experiment (POLEX) designed to augment and contribute to the FGGE, and continuing studies before and after FGGE aimed at the second objective above.

A-21030
Swinton, W.E., **Physicians as explorers. Edward Wilson: Scott's final antarctic companion,** *Canadian Medical Association. Journal,* Oct. 22, 1977 117(8), p.959-963, 974.

The life and exploits of Edward Wilson, who accompanied Scott on both of his expeditions to the Antarctic, serving as chief scientist on Scott's British Antarctic Expedition of 1910 aboard the *Terra Nova,* are described. Wilson was a physician, zoologist, naturalist, and an accomplished illustrator. The records, diaries, and letters of the 1910 expedition all attest to his patience, skill and example. He

dissected and lectured (on the ancestry of penguins, on sketching, and on his travels) equally well. He illustrated the South Polar Times, wrote poems, and was able to help the medical parasitologists and others. Wilson died with Scott and Bowers on the return journey homeward from the Pole in 1912.

A-21064

Akademiia nauk SSSR. Sovetskiĭ komitet po antarkticheskim issledovaniiam, **U.S.S.R. national report to SCAR, No.20,** Moscow, 1978, 63p., Refs. p.49-63.

Charts summarize projects carried out at Soviet antarctic stations in the following fields: meteorology, aurora, cosmic ray studies, ionospheric research, geomagnetism, seismology, geodesy, glaciology, hydrology, and medical and biological investigations. 1977-78 summer season traverses are reported upon and the projected effort for 1979 outlined. A bibliography is provided of articles and books resulting from the year's work; the citations are in Russian.

A-21076

Hedgpeth, J.W., **Research in Antarctica,** *Frontiers,* Autumn 1978 43(1), p.13-16.

DSI 505.73F93

The history of exploration and research in the Antarctic are reviewed. The first research in the Antarctic was associated with the exploitation of seals and penguins. Many of the early expeditions made significant contibutions to meteorology and biology, but their primary purpose was not science. The stimulus for a renewed and intensified study of antarctic regions, emphasizing science, was aroused at the International Geographical Congress of 1895 in London. World War I put an end to scientific effort in Antarctica, except for Adm. Byrd's experiments with aircraft and overwintering. Large scale, nationally supported efforts in science were not resumed until the IGY of 1957, after still another war. Eleven nations participated in the IGY effort, and most of them continue to do so under the Antarctic Treaty of 1959. The studies covered many disciplines, notably meteorology and atmospheric physics, geomagnetism, geology and biology. Today's chief concern is krill fishery. Symbolically recent drilling through the Ross Ice Shelf has revealed a creature which was discovered and named by James Eights.

A-21134

Sovetskaia antarkticheskaia ekspeditsiia, **Fifteenth Soviet Antarctic Expedition. Description and scientific results. Winter research 1969-1971** [Piatnadtsataia kontinental'naia ekspeditsiia. Opisanie i nauchnye rezul'taty. Zimovochnye issledovaniia 1969-1971 gg.], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1977 Vol.64, 151p., In Russian with English table of contents. Numerous refs. passim.

This report on the activities of the 15th SAE is divided into two sections. The first, entitled "General description", includes discussions of the following phases of the winter season's work: organization of expedition activities, activities of the logistics group, construction and repair work, and organization and techniques of scientific activities, by discipline. The second section presents papers on scientific results. For individual papers, see A-21140, H-21141 through H-21146, F-21138, I-21139, K-21136, K-21137, and L-21135, or 33-2068 and 33-2069.

A-21140

Miagkov, S.M., **Principal findings of glaciological and geomorphological research in the McMurdo Sound region (Victoria Land)** [Osnovnye rezul'taty gliatsiogeomorfologicheskikh issledovaniĭ v raĭone zaliva Mak-Merdo (Zemlia Viktorii)], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1977 Vol.64, p.88-99, In Russian. 20 refs.

The author participated in the 15th SAE as an exchange scientist at McMurdo. He briefly described the area and some improvements introduced in the scientific program. A summary of results is given; emphasis was placed on neotectonic variations in sea level during glaciated times, on the basic stages of relief evolution and on the history of glaciation of the continental coast of McMurdo Sound (the Dry Valleys of Victoria Land) as it reflects tectonic movement.

A-21153

British Antarctic Survey, 1977-78, *Polar record,* Sep. 1978 19(120), p.273-278.

Five main British Antarctic Survey stations were occupied throughout the year: Faraday, Halley, Signy, Grytviken, and Rothera. Studies were conducted in marine and terrestrial biology, limnology, geology and field geophysics, glaciology, and the atmospheric sciences. The main biological activity of the year was the initiation of an Offshore Biological Program (OBP), directed toward studies of the role of krill in the ecosystem, its environment, biology and biochemistry, together with the biology of some of its principal predators.

A-21155

Scientific Committee on Antarctic Research, **Fifteenth meeting of SCAR, Chamonix, 16 to 26 May 1978,** *Polar record,* Sep. 1978 19(120), p.295-322.

The agenda of the fifteenth meeting of SCAR included reports of SCAR membership, meetings and symposia, the activities of various working groups and groups of specialists, relations with international and intergovernmental organizations, discussions of the role and functions of SCAR, and financial matters. The activities of the working groups on biology, human biology and medicine, logistics, and meteorology, the report of a joint meeting of groups on meteorology and upper atmosphere physics, and items considered by the group of specialists on Late Cenozoic studies, and the finance committee are set forth in appendices. Details of discussions and recommendations made by the subcommittees on telecommunications and a cooperative air transport system, appear as Annexes to the report of the logistics working group.

A-21158

Govorukha, L.S., **Antarctic necklace** [Antarkticheskoe ozherel'e], Leningrad, Gidrometeoizdat, 1977, 103p., In Russian.

A string of beads around the Antarctic Peninsula lie the South Shetland Islands. The author describes the life and work of the scientists stationed there, the wildlife and geography of the islands, and the volcanic terrain of Deception Island.

A-21160

International interest in krill takes on keener edge with new developments, *Catch (Wellington, New Zealand),* Feb. 1978 5(1), p.21-22.

The current situation in krill fishing is reviewed. A number of nations—the Soviet Union, West Germany, Chile, and others—are involved in research and intend to exploit new findings in locating and processing the small crustaceans to provide second-grade fish suitable for fish sticks, pastes, and other products. New technology and economic potential of krill are discussed briefly.

A-21175

RISP/RIGGS bypasses limits of man-made disciplines, *American Geophysical Union. Transactions,* Oct. 1978 59(10), p.906-908.

One of the sessions of the 1978 American Geophysical Union spring meeting focused on the Ross Ice Shelf Project (RISP). This paper briefly summarizes the presentations made at the meeting. Reports on the meteorology, geochemistry, marine geophysics, biology,

and geologic history of the 500-m-deep ice shelf were included. The sampling area, site J9, is 411 km from the open waters of the Ross Sea. Biological interest in the waters and sediment below the Ross Ice Shelf focused on whether or not organisms could live under the ice at large distances from the open waters of the Ross Sea. Diatoms, microzooplankton, zooplankton, and metabolically active bacteria populations were found along with amphipods and fish.

A-21178

Royal Society of New Zealand. National Committee for Antarctic Research, **New Zealand antarctic research 1978 report,** *Royal Society of New Zealand. National Committee for Antarctic Research. Report to SCAR,* 1978 No.20, 27p.

A summer support group, field parties, specialist scientists and worker visitors numbering 142 people were involved in the New Zealand Antarctic Research Program during the summer season under review. Related field activities undertaken in various locations embraced the following disciplines: geology, geomorphology, glaciology, soil survey, geochemistry, sedimentology, hydrology, oceanography, limnology, biology and ecology. Research by base parties comprised observatory disciplines in seismology, geomagnetism and ionospherics. Nuclear science was served by the collection of air, snow and water samples and meteorology included direct readings of automatic recordings of standard climatological data. Additionally solar and ionosonde activities were also continuously monitored and during the winter months an all sky camera recorded auroral activities from a small unmanned station at Arrival Heights, 5km from Scott Base.

A-21182

Australia. Department of Science. Antarctic Division, **Extract from the annual report: Antarctic Division 1977-78,** Canberra, Australian Government Publishing Service, 1978, 38p., Refs. p.32-33.

Administrative and research activities of the Antarctic Division are discussed. The Division continued to provide support for the Australian National Antarctic Research Expeditions and to undertake its own Antarctic and Australia-based research in glaciology, upper-atmosphere physics, cosmic rays, biology, and medical science. Research programs in these disciplines are reviewed as well as activities in the following areas: scientific instrumentation, engineering, communications, photography, aviation, the Enderby Land survey and relief voyages. Papers and reports resulting from the year's work are listed.

A-21210

Taylor, E.B., **Strategic importance of the polar regions to the United States,** Carlisle Barracks, Pa., Army War College, Oct. 1973, 30p., AD-779 993, 91 refs.

The arctic regions, covering large areas of the earth's surface, are cold and hostile to mankind. The question of the significance of these wastelands to the United States is examined. The arctic and the antarctic regions are described separately and their important resources and features are outlined. (Auth. mod.)

A-21220

Reinacher, E., **Krill meal and other protein sources as substitutes of fishmeal in rainbow trout diets: sensory investigations of influences on eating quality and shelf life** [Ersatz von Fischmehl in Forellenfutter durch Krillmehl und andere Proteinquellen. Sensorische Untersuchungen auf Einflüsse auf die Konsumqualität und Lagerzeit], *Archiv für Lebensmittelhygiene,* Nov.-Dec. 1978 29(6), p.210-212, In German with English summary. 4 refs.

Investigations were carried out on the influence of diets with varying compositions on eating quality and shelf life of rainbow trout (deepfrozen). The fish were fed in net cages in the Baltic Sea. Among others, krill meal-containing food was used. According to the results of one trial, the diet has an influence on the color of especially the raw meat and on the eating quality. Krill meal proved to be a good substitute for fishmeal from a sensory point of view. (Auth.)

A-21250

Australian Academy of Science. National Committee for Antarctic Research, **Australian antarctic and sub-antarctic research programme, January 1977 - March 1978; comments on current activities 1978; proposed programs, January-December 1979,** [Melbourne], Oct. 1978, 48p., Refs. p.46-48.

Year-round multidisciplinary activities continued at Casey, Davis and Mawson in Antarctica and at Macquarie Island in the Sub-Antarctic. Eighty-three men and two women wintered over in 1977 and eighty-three men and one woman are at the stations in 1978. The main summer field program in 1977/78 was Enderby Land, continuing the investigation of the region west of Mawson commenced in 1974/75. The program included high and low level vertical aerial color photography, geodetic survey, geological mapping, gravity and magnetic measurements, and a glaciological traverse. During 1977 parties from Casey obtained ice cores from two holes drilled to depths over 400 m on Law Dome. These are the deepest holes drilled by an Australian expedition in Antarctica.

A-21253

Schulz, E., Petersen, U., **Evaluation of krill meal as protein feed** [Bewertung bon Krillmehl als Eiweissfuttermittel], *Kraftfutter,* Mar. 1978 61(3), p.130-135, In German with English summary.

DNAL,389.78.K85

The article tells about the possible use of krill meal as protein feed in animal nutrition. Numerous analytical and experimental studies were made with three kinds of krill meal gained from the first German fishing tour to the Antarctic in 1975/76. The raw protein values of the krill meals were above those of the crab meals known up to now; the composition of the amino acids is similar to that of fish meal. The evaluation of protein in a biological test with rats showed clear differences between the three kinds of meal, this effect being essentially due to variations in digestibility. A similar evaluation in the nutrient digestibility of the krill meals tested could be observed in digesting trials with pigs. In feeding trials with pigs, up to 16% krill meal of charge I could be used with good success, whereas the same formulation with charge II and charge III showed a decrease in efficiency. The bisection of the krill meal-III-quantity, however, showed good success. The results of the feeding trials with broilers, however, were less favorable. A formulation with 3% of krill meal showed already a decrease in efficiency. The organ-oleptical testing showed undesired flavor defects of the slaughtered bodies. Before making a final judgement, however, there is need for more testing and trials which, above all, shall deal with the relations between the preparing and storing of the krill meal and their effects on the nutrients and components, as well as the effects on their feed efficiency for livestock. (Auth.)

A-21259

Reimers, E., Gjelsvik, T., **Fifty years of service in polar regions,** *Research in Norway,* 1978, p.20-26.

The history of Norwegian research activities in arctic and antarctic regions for the past 50 yr is outlined. Highlighted antarctic activities include Amundsen's journey to the South Pole at the turn of the century, the joint Norwegian-British-Swedish expedition of 1949, the establishment of Norway station in Dronning Maud Land during the IGY in the late 1950's, a shipborne expedition including 21 scientists during the austral summer of 1976/77, and a helicopter supported expedition in 1978 to expand studies in the Weddell Sea and Dronning

Maud Land. An upper-atmosphere meteorological station will be established on Bouvet I. as part of the Global Atmospheric Research Program (GARP).

A-21260

British Antarctic Survey, *Marine observer,* Oct. 1978 48(262), p.188-195 + photos.

This paper traces the history of the British Antarctic Survey and describes its bases and support vessels, organization, administration, and scientific research activities. The Survey maintains permanent bases at South Georgia, Signy I., Argentine Is., Rothera Point, and Halley Bay. Another small base at Damoy Point, Wiencke I. serves as an air facility and transit point. Logistics and research support are provided by the vessels John Biscoe and Bransfield, and two ski-wheeled Twin-Otter aircraft. The Survey's staff numbers about 360. Research activities include programs in the atmospheric sciences, geology, geophysics, glaciology, biology, and physiology.

A-21270

Beaglehole, J.C., **Journals of Captain James Cook. 4. Life of Captain James Cook,** London, Adam and Charles Black, 1974, 760p., Refs. p.715-734.

DLC G246.C7B38 1974b

This is a detailed biography of the sea captain and explorer James Cook, who, in the author's words, "destroyed one great illusion of the human mind—that of a habitable southern continent." Using Cook's journals and other contemporary documents, the historian traces his two southern voyages.

A-21292

Lobo, C.O., **Richard E. Byrd: admiral of the ends of the earth** [Richard E. Byrd: el Almirante de los confines de la tierra], *Santiago de Chile. Instituto Antártico Chileno. Revista de difusión,* 1977 No.10, p.5-23, In Spanish.

This article is a brief biography of Richard Byrd and a discussion of his contribution to antarctic exploration. It is illustrated with a number of photographs of the admiral, the ships he commanded and other scenes.

A-21358

Barbiero, F., **Civilization under the ice; on the threshold of the discovery of the century** [Una civiltà sotto ghiaccio; alle soglie della scoperta del secolo], Milano, Nord, 1974, 179p., In Italian. Refs. p.177-179.

A theory is advanced according to which the Earth's axis, about 12,000 years ago, was inclined 4-6 degrees to the ecliptic, instead of the present 23. About that time the Earth was hit by an asteroid or comet, displacing the axis and causing a 2,500 km shift in the position of Siberia, for example, moving it from a mild to a rigorous climatic zone. This hypothesis provides an explanation—lacking in other ice-age theories—for the sudden extinction of dinosaurs. In the southern hemisphere, part of Antarctica, hitherto ice-free and sustaining an advanced culture—that of the lost continent of Atlantis—became submerged when the cataclysm occurred, and then was covered with ice. The author presents ample evidence in support of this hypothesis: descriptions of Atlantis in Plato's writings, traditions of a universal flood in many nations' recollections, and findings in various scientific disciplines. It is further believed that several ships escaped the destruction of Atlantis (Antarctica), and their passengers settled in different parts of the world, spreading their advanced culture. Their maps (clearly showing Antarctica) became a part of the cultural heritage of Antiquity and were copied well into the Middle Ages with insertions of place names of the later era. An aerial photograph of Kemp Coast is presented, on which the author identified several spots as likely archeological sites. For example, Poseidon's temple, described by Plato, would be located on the east side of Berkner Island. In an introduction to the book, Silvio Zavatti, director of the Istituto Geografico Polare, endorses the author as a young naval engineer with an excellent scientific education. Zavatti's efforts to arrange an archeological expedition for Barbiero, with the help of the Instituto Antártico Argentino, were unsuccessful. Thus the author's hypothesis, although well documented, still awaits tangible proof.

A-21359

U.S. National Oceanic and Atmospheric Administration. Environmental Data and Information Service, **Environmental inventories Antarctic area,** Washington, D.C., 1978, 24p. PB-289 763.

This publication is the first in a newly established series of publications from the National Oceanic and Atmospheric Administration's Environmental Data Service. Its purpose is to show in an easily understandable form the various types of environmental data available from EDS. The inventory illustrates in graphic form the types and amounts of data available from EDS for specific geographic regions. For this issue the Antarctic was chosen. Future issues will cover the Arctic, Mediterranean Sea, and tropical oceans of the world (four areas in all).

A-21360

American Geophysical Union, **Spring meeting 1977, abstracts,** *American Geophysical Union. Transactions,* June 1977 58(6), p.366-562.

Seventeen of the papers presented at the AGU Spring Meeting pertain to the Antarctic and the Southern Ocean. Pertinent abstracts break down into the following categories: geodesy—1 (p.368); hydrology—1 (p.385); oceanography—6 (p.404, 414, 416, 421); magnetospheric physics—2 (p.470, 479); tectonophysics—3 (p.502, 509); and volcanology—4 (p.528-529, 536).

A-21363

American Geophysical Union, **Fall meeting 1977, abstracts,** *American Geophysical Union. Transactions,* Dec. 1977 58(12), p.1116-1270.

Eleven of the papers presented at the fall meeting of the AGU relate to the Antarctic and the Southern Ocean. De Szoeke (0-137) spoke on baroclinic instability, 6 papers pertain to magnetospheric physics (SM-48, 50-52, 87, 88), Meng presented a paper on low energy electrons in the polar caps (SS-25), T-34 and 36 relate to plate tectonics in the Southern Ocean, and V-35 discusses age of zircons from the Reinbolt Hills.

A-21364

American Geophysical Union, **Spring meeting 1978, abstracts,** *American Geophysical Union. Transactions,* Apr. 1978 59(4), 258-412.

Twenty-four of the papers presented at the spring meeting of AGU relate to the Antarctic and Southern Ocean. Two pertain to geomagnetism and paleomagnetism, (GP-16, GP-29) two to ocean currents, (0-36, 0-41) 0-152-164 to the Ross Ice Shelf Project, SA-88 to an ionization hole in the winter F-region, SM-90 to Pc1 events and optical emissions, SM-98 to plasma convection in the polar cusp, Sm-115, 120, and 121 to plasma particles, and T-123 to sea floor spreading in the southern Indian Ocean.

A-21365

American Geophysical Union, **Fall meeting 1978, abstracts,** *American Geophysical Union. Transactions,* Dec. 1978 59(12), p.1050-1226.

Twenty-seven of the papers delivered at the AGU fall meeting relate to the Antarctic and the Southern Ocean. The abstracts break down into the following categories: paleomagnetism—1 (p.1059); Ocean crust—1 (p.1111) Southern Ocean dynamics—13 (p.1119-

1121); aeronomy—1 (p.1146); magnetospheric physics—8 (p.1160,1165, 1167-69, 1171, 1172); tectonophysics—1 (p.1191); and volcanology—2 (p.1216, 1223).

A-21383
Fishery Information, Data and Statistics Service, **Southern Ocean (Major fishing areas 48, 58, 88) nominal catches by countries and species, 1971-1977,** *FAO fisheries circular,* 1978 No.648, 25p.

Statistics on Southern Ocean catches of hake, various cods, several icefish, krill, squid, and miscellaneous species are broken down by year and nation.

A-21449
Steinberg, R., **Fishing gear techniques** [Fangtechnische Untersuchungen], *Archiv für Fischereiwissenschaft,* July 1978 Vol.29, Beiheft 1, p.64-71, In German with English summary.

Due to the necessity to catch krill in different depths, even under difficult weather conditions, the midwater trawl was chosen as the most suitable gear. The trawl was specially modified by using small mesh inlets. On an average for all fishing stations, with this special krill trawl, the stern trawler *Weser* caught 11 tons per hour and the research vessel *Walther Herwig* 3.4 tons per hour, though both vessels did not fish under commercial conditions. Several times, more than 60 tons of krill per hour were caught. Occasionally, large quantities of adult krill were caught in 200 to 300 m depth. Under the conditions found during the time of the expedition, there is reason to assume that a commercial fishing vessel of 3.000 h.p. may be able to produce a total catch of 200 tons per day. Good results were obtained with a 200-foot bottom trawl when fishing for antarctic fish. (Auth.)

A-21453
Sovetskaia antarkticheskaia ekspeditsiia, Ignatov, V.S., ed, **Nineteenth Soviet Antarctic Expedition. Winter research 1973-75** [Deviatnadtsataia sovetskaia antarkticheskaia ekspeditsiia. Zimovochnye issledovaniia 1973-1975 gg.], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1978 Vol.69, 144p., In Russian. Numerous refs. passim. For individual papers see A-21454, B-21464, B-21465, C-21463, H-21457, H-21458, H-21466, I-21455, I-21456, K-21459, K-21461, K-21462 and L-21460, or 33-3126 and 33-3127.

This volume reports on the winter activities of the 19th SAE. The first half includes a description of the expedition's program, short reports on the activities of each working group's accomplishments, and a summary of engineering and construction work carried out during the period. The second half is composed of articles written by expedition members to report on their work in geophysics, atmospheric physics, oceanography, zoology, medicine and other disciplines.

A-21454
Ignatov, V.S., **Winter activities of the 19th SAE** [Zimovochnye raboty deviatnadtsatoĭ sovetskoĭ antarkticheskoĭ ekspeditsii], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1978 Vol.69, p.9-48, In Russian.

This overall description of the wintering over activities of the 19th SAE is divided into two sections. The first outlines the organization and methods of the scientific activities—observational program, surface and upper-air meteorological research, geophysical studies, glaciological investigations, oceanographic research, and medical research. The second portion covers the engineering and construction work accomplished by the group. Appended is a list of expedition participants by station and specialty.

A-21470
Dugger, J.A., **Exploiting antarctic mineral resources—technology, economics, and the environment,** *University of Miami law review,* Dec. 1978 33(2), p.315-339, Numerous refs.

The author discusses the possibilities of exploiting mineral resources in the Antarctic. Of particular interest are hydrocarbon resources in the coastal and offshore regions. Technological, economic and environmental problems with which the Antarctic Treaty nations will have to deal—commercial exploration, drilling, production, storage, transportation, and pollution prevention and cleanup—are discussed. Potential impact on the environment is speculated upon and guidelines are offered.

A-21636
Hushen, W.T., **Polar Research Board, 1977-1978,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.217-218.

The Polar Research Board advises the U.S. government on research in the polar regions and it adheres to the International Council of Scientific Unions Scientific Committee on Antarctic Research on behalf of the National Academy of Sciences. Specific antarctic projects undertaken by the following committees, panels, and study groups of the board are described: Committee on Glaciology; Ad hoc study group on snow research and control; U.S. organizing committee for the third SCAR/IUGS/ICG symposium on antarctic geology and geophysics; Committee on International Polar Relations; SCAR/SCOR group of specialists on the living resources of the southern ocean; SCAR group of specialists on environmental impact assessment of mineral resources exploration and exploitation in the Antarctic; and Polar Experiment (POLEX) panel [joint with U.S. Committee for the Global Atmospheric Research Program (GARP)].

A-21637
Smith, M.C., **Searching on-line data bases for the *Antarctic Bibliography*,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.218-219.

The use of on-line data bases as a searching tool for the *Antarctic Bibliography* is surveyed. The search strategy and effectiveness of the system are examined. More than 100,000 new citations are reviewed monthly, using on-line data bases. A search of printed products which would require 15-18 hr a mo can be accomplished on line at a terminal in 20 min per month. The cost of identifying these materials on DIALOG is around $.65 per article. The materials are then abstracted, indexed, keyboarded, proofread, and finalized for publication by the *Antarctic Bibliography* staff.

A-21647
Neider, C., **Gathering materials for a second book about Antarctica,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.231.

The author describes his travels and observations in Antarctica, gathering materials for a new book about Antarctica, to emphasize the Southern Ocean and the Antarctic Peninsula. His first was *Edge of the World: Ross Island, Antarctica.* The author was awarded a Guggenheim Fellowship for his studies titled *Science, Technology and Human Values in Antarctica.* He was also appointed a Fellow of the Center for Advanced Study in the Behavioral Sciences in Stanford, Calif., for 1977-78 for the purposes of expanding his antarctic studies and beginning the writing of the new book, *Beyond Cape Horn.*

A-21651
Simonov, V., **Discoverer of Antarctica (in observance of T.T. Bellingshausen's 200th birthday)** [Pervootkryvatel' Antarktidy (K 200-letiiu so dnia rozhdeniia F.F. Bellinsgauzena)], *Morskoĭ flot,* 1978 No.8, p.25-27, In Russian.

A short biography and review of his many accomplishments and discoveries are offered in observance of the 200th anniversary of the Russian explorer of the late 18th and early 19th century, T.T. Bellingshausen, who is one of the men claimed to have first sighted the Antarctic continent.

A-21655
U.S. National Science Foundation, **U.S. Antarctic program,** *Applied optics.* Jan.1, 1979 18(1), p.A3-A4.

The U.S. Antarctic program's ongoing projects in all major disciplines are reviewed, based on a report prepared by NSF-New Zealand, NSF-Washington, D.C., and the U.S. Navy Task Force 199, San Francisco.

A-21685
Akademiia nauk SSSR. Mezhduvedomstvennaia komissiia po izucheniiu Antarktiki, **Antarctic; Commission reports, Vol.17** [Antarktika; doklady komissii, vypusk 17], Moscow, Nauka, 1978, 275p., In Russian. Numerous refs. passim. For individual papers see A-21686, A-21687, A-21705, B-21706, C-21702, E-21697 through E-21701, E-21704, F-21695, F-21696, H-21707, H-21708, I-21691, J-21693, K-21688 through K-21690, K-21692, K-21694, K-21709 and L-21703, or 33-3620 through 33-3622.

DLC G576.A65

This volume comprises papers read at the 2nd All-Union Conference on Antarctic Research, commemorating the 20th year of Soviet activity and international cooperation in the Antarctic. The papers review the most significant findings in the last 20 years, their practical application in exploiting the polar areas, and the direction research should take in the future.

A-21686
Korotkevich, E.S., Dubrovin, L.I., **Twenty years of Soviet research in the Antarctic** [20 let sovetskikh issledovaniĭ v Antarktike], *Antarktika; doklady komissii,* 1978 No.17, p.5-19, In Russian.

This is a short history of the organization and work of the Soviet Antarctic Expedition from 1955 to 1976. Research carried out at stations and on traverses and the most significant developments are reviewed.

A-21687
Tolstikov, E.I., **Antarctica—the peace continent** [Antarktika—kontinent mira], *Antarktika; doklady komissii,* 1978 No.17, p.20-26, In Russian.

International scientific cooperation in the Antarctic over the past 20 years is described. This collaboration has been highly productive and clearly demonstrates the feasibility of various nations' working together to carry out common scientific tasks. A foremost example of international goodwill is the pooling of resources by Treaty signatories in scientific research.

A-21705
Dubrovin, L.I., Preobrazhenskaia, M.A., **Russian names in Antarctic toponymy** [Russkie nazvaniia v toponimike Antarktiki], *Antarktika; doklady komissii,* 1978 No.17, p.217-225, In Russian. 22 refs.

This article describes the toponymy of Antarctica, where natural conditions and land forms differ greatly from those in other parts of the world. A review of the Soviet Antarctic Expedition—their geographical and cartographic work—and the place names assigned by SAE is offered. Names given in honor of the first Russian Antarctic Expedition and by other nations in honor of Russian explorers are also discussed.

A-21712
Nikonorov, I.V., Ivashin, M.V., Borodin, R.G., **Principles and methods of whaling regulation [Pt.1]** [Printsipy i metody regulirovaniia promysla kitov], *Rybnoe khoziaĭstvo,* 1977 No.8, p.15-18, In Russian.

Extent of whaling by nation and catches is tabulated from 1919 to 1975. Statistics are for the Antarctic and the northern Pacific. The impact of international efforts at controlling whaling is discussed.

A-21713
Golubev, V., **Eminent polar explorer (in observance of the 70th anniversary of M.M. Somov's birth)** [Otvazhnyĭ issledovatel' poliarnykh stran (K 70-letiiu so dnia rozhdeniia M.M. Somova)], *Morskoĭ flot,* 1978 No.4, p.24-25, In Russian.

M.M. Somov, 1908-1973, took an active part first in arctic and then in antarctic research. The author reminisces about the time he and Somov were members of the Soviet expedition assigned to begin construction of Mirnyy Observatory.

A-21714
Avsiuk, IU.N., **20 years since conquest of the Pole of Inaccessibility** [20 let otkrytiiu Poliusa nedostupnosti Antarktidy], *Meteorologiia i gidrologiia,* 1979 No.3, p.117-118, In Russian.

On Dec. 13, 1958 a Soviet traverse team from the 3rd SAE attained the Pole of Inaccessibility. They set up sleeping quarters, a radio antenna, meteorological equipment and other necessities. The logistics and scientific aims of this expedition are described.

A-21717
Drewry, D.J., Huntford, R., **Amundsen's route to the South Pole,** *Polar record,* Jan. 1979 19(121), p.329-336, 9 refs.

The route taken by Amundsen on his successful race for the South Pole in 1911 has never been completely traced, partly because he used no longitude sights during the trip and partly because the account in his book, *The South Pole,* is sketchy and inaccurate. The authors attempt to determine, by studying Amundsen's diaries, notebooks, and other original sources, the precise route he took and the identity of some of the landmarks he mentioned or named.

A-21720
Deacock, W., **Big Ben—a sub-antarctic peak,** *New Zealand alpine journal,* 1963 20(50), p.37-44, 1 ref.

The author was a member of a three-man party that attempted an assault on Big Ben on Heard Island. Although the group proved a route to 7,500 feet and made camp on a plateau, they were prevented by heavy winds and rime from continuing to the summit.

A-21721
Wilson, J.G., **Mt. Lister: an antarctic climb,** *New Zealand alpine journal,* 1963 20(50), p.59-65.

The author climbed Mt. Lister in the McMurdo Sound area. He describes the successful feat and points out those features of antarctic climbing that make it safer in some ways than climbing peaks of equal height at lower latitudes.

B. BIOLOGICAL SCIENCES

B-19249

McSweeny, E.S., **Morphology and distribution of the antarctic cranchiid squid *Galiteuthis glacialis* (Chun),** Miami, Fla., University, 1971, 185p., University Microfilms order No.71-19,859, Ph.D. thesis. Refs. p.176-185.

The external morphology, internal anatomy, growth, development, maximum size and maturity of *Galiteuthis glacialis* in Antarctic waters are described and illustrated. The material examined included 824 specimens from 244 stations made by the *Eltanin*. Food preference, from stomach contents, was determined to be crustacea, chaetognatha, fish and other organisms, in that order. Geographical range of *G. glacialis* is circumpolar, between the continent and the Antarctic Convergence. The vertical range of the species extends downward to about 1,500 m, with the bulk of the population being concentrated between 600-1,000 m. Factors suggested which may restrict the species to the upper layers include light penetration and availability of food.

B-19251

Hargraves, P.E., **Species composition and distribution of net plankton diatoms in the Pacific sector of the Antarctic Ocean,** Williamsburg, Virginia, College of William and Mary, 1968, 171p., University Microfilms order No.68-17,561, Ph.D. thesis. Refs. p.160-170.

The plankton diatoms of the Pacific sector of the Antarctic Ocean have been examined in 96 samples from *Eltanin* cruises 10-15. A total of 115 taxa in 36 genera was identified on the basis of light and electron microscope observations. Of these, 5 are believed new to science. Electron microscope observations provided new data and confirmed previous observations on the fine structure of many of the species. New combinations of taxa are presented. The floristic composition of communities made possible delimitation of the Subantarctic Zone and northern and southern regions of the Antarctic Zone. The existence of several benthic coastal species in the Southeast Pacific is evidence for extensive movement of water away from the South American continent. (Auth.)

B-19252

Pearse, J.S., **Reproductive periodicities in several contrasting populations of *Odontaster validus* Koehler, a common Antarctic asteroid,** Stanford University, 1965, 203p., University Microfilms order No.65-9457, Ph.D. thesis. Refs. p.189-203.

This study compares the reproductive and related changes occurring mainly in two populations of the asteroid *Odontaster validus* in McMurdo Sound, Antarctica. It is an omnivorous scavenger that has been observed feeding on small crustaceans, gastropods, polychaetes, carrion, seal feces, and algae. Feeding is probably accomplished partly by means of a flagellary mucoid mechanism. In both the McMurdo Station and Cape Evans populations of *O. validus* the gametogenic and spawning periods are very similar and in synchrony. Nevertheless, the gonads in the Cape Evans animals are usually about twice as large as they are in comparable McMurdo Station animals indicating that many more gametes are produced by individuals of the Cape Evans population. Spermatogenesis in *O. validus* is generally similar to that in many other asteroids. Among other asteroids that have been studied, there is little or no overlap of the annual oocyte generations in asteriids.

B-19253

Hays, J.D., **Antarctic radiolaria and the late Tertiary and Quaternary history of the Southern Ocean,** New York, N.Y., Columbia University, 1964, 218p., University Microfilms order No.65-2079, Ph.D. thesis. Refs. p.147-151.

The Polar Front exerts a powerful influence on the distribution of radiolaria in the Southern Ocean. This influence is seen in the sediments, somewhat north of the mean position of the Front, and by the mixed zone which forms a transition from Antarctic species confined to the cold waters south of the Front to warm water species most of which are cosmopolitan. The mixed zone may be caused by mixing of Antarctic and sub-Antarctic surface waters or by the northward transport of the tests of dead Antarctic species in the intermediate or bottom waters. Compared with the warm water fauna the Antarctic fauna has fewer species but many more individuals, having heavier shells than their northern counterparts. The cores that penetrate to the older sediments show a sequence of radiolaria which indicate a cooling of the Southern Ocean since late Tertiary time. A lithologic and faunal boundary is correlated with a boundary labeled Pliocene-Pleistocene in other parts of the ocean by previous workers. It is believed that the lithologic change in Antarctic sediments was ultimately caused by the deterioration of climatic conditions that eventually produced glaciation on Antarctica. The commencement of large scale freezing of sea water around Antarctica increased the intensity of Southern Ocean circulation. This increased intensity had profound effects on the fauna and flora of the ocean which in turn produced a striking change in the type of sediments deposited.

B-19268

Thornton, I.W.B., Wong, S.K., Smithers, C.N., **Philotarsidae (Psocoptera) of New Zealand and islands of the New Zealand Plateau,** *Pacific insects,* Aug. 31, 1977 17(2-3), p.197-228, 15 refs.

The philotarsid (Psocoptera) fauna of New Zealand, and Campbell, Auckland, Antipodes, Snares and Macquarie islands is reviewed. Ten species are newly described, and placed in the genera *Zelandopsocus* (2), *Austropsocus* (6), and *Aaroniella* (2). The genus *Bryopsocus* is erected for 2 species previously placed in *Austropsocus* and *Zelandopsocus*. A key to the 20 species of philotarsids of the area is provided, 2 new synonyms are created, and many new distributional records listed. Relationships with the philotarsid faunas of New Caledonia and Australia are discussed. (Auth.)

B-19272

DeVries, A.L., **Freezing resistance in some Antarctic fishes,** Stanford University, 1968, 135p., University Microfilms order No.68-15,041, Ph.D. thesis. Refs. p.131-135.

This study is an attempt to elucidate the mechanisms that enable the Antarctic fishes to avoid freezing while living in freezing sea water. Measurements of the serum freezing points of the Trematomus fishes from ice-laden shallow water of McMurdo Sound show that these fishes do not freeze because they have blood which is slightly hyperosmotic to sea water, while Trematomus inhabiting the deep water (300 meters) have blood which is isosmotic to sea water. Analyses of the serum of the Trematomus fishes showed that sodium chloride accounts for between 39 and 45% of the serum freezing point depressions. Studies showed that the Trematomus fishes are capable of only a limited acclimation to warmer temperatures.

B-19275

Feeney, R.E., **Biological antifreeze,** *American scientist,* Nov.-Dec. 1974 62(6), p.712-719, 38 refs.

Chemical composition and general properties of the glycoprotcins of *Trematomus borchgrevinki* and *Dissostichus mawsoni* are presented in tables. Chemical composition and general properties of the glycoproteins of *T. borchgrevinki* and *D. mawsoni* are presented in tables. Charts show the effect these substances have on the freezing process, lowering the freezing point but not affecting the melting point. Models that may explain the mechanism by which this is accomplished are offered; in this context the structure and properties of both ice and liquid phases of water are considered.

B-19276

Tolkach, V.V., Gromov, V.V., **Yttrium-90 absorption by krill,** *Oceanology,* June 1977 16(6), p.575-577, Translated from Okeanologiia, Nov.-Dec. 1976. 8 refs.

Yttrium-90 absorption by krill from sea water (bioassimilation and adsorption) has been studied. Yttrium-90 bioassimilation was found to follow an exponential law which provides a means of calculating kinetics of a given radionuclide. Coefficients of yttrium-90 accumulation by krill at different stages of maturity were determined. Yttrium-90 adsorption by krill surface is shown to be essentially irreversible, comprising no more than 25% of the total absorbed. (Auth.)

B-19284

Shabica, V.S., **Reproductive biology of the brooding antarctic lamellibranch *Kidderia subquadratum* Pelseneer,** Corvallis, Oregon State University, July 15, 1974, 142p., Master's thesis. Refs. p.132-138.

Kidderia subquaratum is a small lamellibranch (the largest observed was 6.8 mm long) found on rocky substrates in the intertidal and subtidal zones of the Antarctic Peninsula. The sexes are separate and the females comprised 54.1% of the population studied at Palmer Station. The differential in the sex ratio is neither size nor age related. The females are ovoviviparous and retain their embryos in brood pouches of the demibranchs. The reproductive system includes the male and female systems, and the ctenidial and siphonal systems. Oögenesis takes 15 to 19 mo. Spermiogenesis in the male encompasses an 8 mo period and precedes the development of primary oöcytes by 1 mo. The brood size is dependent on the size of the female. The period of development of the embryos is 5 mo. Light is considered to be the primary controlling factor on reproduction of *Kidderia subquadratum.*

B-19288

Komatsu, S.K., **Proteins of cold-adapted Antarctic fishes,** Davis, University of California, 1969, 134p., University Microfilms order No.70-3140, Ph.D. thesis. Refs. p.65-70.

The blood serum proteins and muscle aldolase of cold-adapted Antarctic fishes have been studied. These included *Trematomus borchgrevinki, T. bernacchii, T. hansoni, Gymnodraco acuticeps, Chinodraco kathleenae,* and *Dissostichus mawsoni.* Comparative studies on serum proteins were done on humans, king salmon, rainbow trout, and carp. Comparative studies were done on rabbit muscle aldolase. The blood of *T. borchgrevinki* clotted much faster at 0 deg than did the blood of carp, humans, or rabbit and the ability to clot was destroyed by incubation at 38-40 deg., a temperature at which human and rabbit blood clotted rapidly. Studies on purified aldolase from *T. borchgrevinki* and *D. mawsoni* indicated that they differed from rabbit muscle aldolase only in their extreme temperature lability. (Auth. mod.)

B-19289

Allison, R.G., **Proteins of penguin egg white and blood serum,** Davis, University of California, 1968, 107p., University Microfilms order No.69-16,334, Ph.D. thesis. Refs. p.39-43.

The blood serum and egg white proteins of the Adelie penguin have been studied. Comparative studies were made with the domestic chicken, man, and five other species of penguins, the Yellow-eyed, Little Blue, White-flippered, Humboldt and Emperor penguins. Studies included incubation of whole eggs, isolation and physiochemical characterization of certain egg white proteins, and a comparative characterization of the blood serum proteins of the Adelie penguin. The blood sera of the six penguin species showed a strong immunological cross-reactivity, which was found between Adelie penguin blood serum and egg-white proteins, particularly between the ovotransferrin and the serum transferrin. Incubation of whole Adelie penguin eggs at elevated temperatures (42 deg.) caused rapid deterioration of the physical properties of the egg white and yolk.

B-19297

Yamanaka, M., Sato, K., **Distribution of terrestrial plant communities near Syowa Station in Antarctica, with special reference to water supply and soil properties,** *Antarctic record,* Aug. 1977 No.59, p.54-67, 9 refs., In Japanese with English summary.

Ecological studies were made on terrestrial plant communities (mainly mosses and algae), with special reference to water supply and soil properties. Moss communities were distributed mainly on the northeastern and northwestern slopes of the bare-rock zones, such as Akarui Point, Tama Point, Tensoku Rock, Tottuki Point and Mukai Rocks, where water is supplied directly from the ends of the continental ice sheet in the summer. To elucidate the relation between distribution pattern of plant communities and nutrients, the soil samples for chemical analyses were taken at 37 points in various areas, and pH, total N, total C, available P2O5 and exchangeable Ca, Mg, K and Na were measured in the laboratory. Correlations were observed, to a certain extent, among moss community and total N and C. It can be said that available phosphates play an important role in distribution and growth of a species of green algae *(Prasiola crispa* subsp. *antarctica).* On the other hand, many points remain uncertain regarding the relation between the distribution of plants and the inorganic nutrient such as Ca, Mg, K and Na. (Auth.)

B-19298

Nakanishi, S., **Ecological studies of the moss and lichen communities in the ice-free areas near Syowa Station, Antarctica,** *Antarctic record,* Aug. 1977 No.59, p.68-96, Refs. p.95-96., In Japanese with English summary.

Ecological investigations of the terrestrial vegetation near Showa Station were made as a part of the studies on the ecosystem to serve as the background for an evaluation of the effects of environmental contamination by human activities in the Antarctic. It became clear from floristic and taxonomical investigation that one lichen (*Physcia dubia* (Hoffm.) Lett.) and two mosses (*Bryum antarcticum* Hook. f. & Wils. and *Grimmia lawiana* Willis) could be added to the flora of the areas, and also that there were some species which previously had been treated under wrong scientific names. The moss communities were classified into six sociations on the basis of species composition. The distribution of the moss sociations was analyzed in relation to the pattern of water supply. It was ascertained that the distribution of some sociations was closely correlated with this pattern. A remarkable relationship between lichen communities and bird nests was observed in the central region of Skarvsnes. It seems that the species composition and the distribution of the lichen communities are influenced decidedly by the organic nutrients supplied from the excrement of sea birds. The direction of the habitat of each terrestrial

community was examined in all ice-free areas. Most of the communities grew in habitats on the leeward side of wind-barriers facing from west-northwest to southwest, although the direction was somewhat determined by the pattern of water supply in their habitat. Further examination in detail, however, revealed that each ice-free area had the most frequent direction slightly different from that of the others. This seems to suggest that the direction of the prevailing wind may be different in each ice-free area. (Auth.)

B-19299

Shimizu, H., **Vegetational distribution and habitats on West Ongul and Teöya Islands, Antarctica,** *Antarctic record,* Aug. 1977 No.59, p.97-107, 11 refs., In Japanese with English summary.

The vegetational distributions and habitats were investigated on West Ongul and Teöya Islands, Antarctica, during the wintering period of 16th Japanese Antarctic Research Expedition (1975-1976). About 150 moss colonies in the region were newly confirmed besides about 150 colonies described previously. Lichen colonies were very sparsely distributed, and all of them occurred on rock faces used by birds as perches. The moss communities which consisted of *Bryum pseudo-triquetrum* (Hedw.) Gaerth. (this species has been treated as *B. inconnexum* Card.) and/or *Ceratodon purpureus* (Hedw.) Brid. are very abundant to western parts of West Ongul Island. The stands confirming these moss communities are topographically classified into the following 4 types: Stand type I, ground moistened by melt water trickling from snow-drift; Stand type II, ground by snow-drift; Stand type III, periphery ground of snow-drift or snow patch; Stand IV, rock base lying at more upper slope than snow-drift. The moss communities show preference of southwestern to northwestern slopes where they get supply of water from snow-drift melted by solar radiation. (Auth.)

B-19302

Miwa, T., **Distribution of anaerobic bacteria isolated from the area around Syowa Station,** *Antarctic record,* Aug. 1977 No.59, p.125-137, 21 refs., In Japanese with English summary.

From the soil in the area around Showa Station, 193 strains of clostridia were isolated and identified. It was interesting that many clostridia were contained in the soil samples taken from the places which were considered to be scarcely contaminated by human beings and animals. One hundred and fifty-five strains were assigned to 11 species, and *C. perfringens, C. biferınentans* and *C. sordellii* were isolated frequently, while *C. sporogenes, C. plagaruin, C. paraperfringens, C. septicum, C. tertium, C. cadaveris, C. butyricum* and *C. felsineum* less frequently. The peculiar distribution and characteristics of the clostridia in the Antarctic soil were discussed in comparison with those found in the soil in Japan. *C. sordellii* and *C. paraperfringens* were never isolated from the soil in Japan. Distribution of aerobes was less extensive than anaerobes in the Antarctic soil. To the tetracycline group among antibiotics tested, the Antarctic strains were more susceptive than the control (Japan) strains. (Auth.)

B-19305

Ohyama, Y., Matsuda, T., **Free-living prostigmatic mites found around Syowa Station, East Antarctica,** *Antarctic record,* Aug. 1977 No.59, p.172-176, 6 refs., In Japanese with English summary.

As one of the biological programmes of Japanese Antarctic Research Expedition, the collection of free-living mites was made at sandy habitats of the following ice-free areas in Lützow-Holm Bay in January and February, 1976: East Ongul Island, Langhovde and Skarvsnes. Three species of prostigmatic mites were identified from the collection as follows: *Nanorchestes antarcticus, Tydeus ercbus* and *Protereunetes minutus.* This is the first record on these mites from the ice-free areas mentioned above. (Auth.)

B-19308

Trave, J., **Studies of terrestrial microarthropods on Amsterdam and St. Paul Islands. 1. Amsterdam Island: preliminary quantitative study** [Recherches sur les microarthropodes terrestres des îles Amsterdam et Saint-Paul. 1. Ile Amsterdam: Etude quantitative préliminaire], *Revue d'écologie et de biologie du sol,* July 1973 10(3), p.295-306, In French. 6 refs.

67 soil and terrestrial plant samples from Amsterdam Island yielded 19,000 invertebrates. Acarians (69.9%) and Collembola (22.-1%) were the principal faunal elements; Paurapods, Insecta and oniscoid Isopoda were also present. Seven biotopes were studied and quantitative differences noted.

B-19309

Steyaert, J., Bailleux, E.M., ***Eucampia balaustium* n. sp. Castr. and *Mölleria antarctica* n. sp. Castr. Taxonomy and nomenclature,** *Microscopy,* Jan.-June 1975 32(11), p.461-470, 39 refs.

Based on L. Mangin's work and on their own observations, the authors confirm that *Eucampia balaustium* n. sp. Castr. and *Mölleria antarctica* n. sp. Castr. are two forms of one and the same species to which the name *Eucampia antarctica* (Castr.) Mangin had been inadequately given by L. Mangin in 1915. In conformity with the International Rules for Botanical Names the denomination *Eucampia balaustium* Castr. must be re-established as specified by Hustedt in 1939. (Auth.)

B-19310

Sawyer, R.T., **New species of "tentacled" marine fish leech parasitic on *Notothenia* from the subantarctic Marion and Crozet Islands,** *Hydrobiologia,* Oct. 30, 1972 40(3), p.345-354, 6 refs.

A new species of marine fish leech parasitic on *Notothenia coriiceps* is described. Its relationships with the closely related *Antarctobdella tcherniai* Dollfus 1964 and *Ophthalmobdella bellisioi* Szidat 1965 are critically discussed. (Auth.)

B-19312

Caretta, G., Piontelli, E., ***Microsporum magellanicum* and *Cunninghamella antarctica,* new species isolated from Australic and antarctic soil of Chile,** *Sabouraudia,* Mar. 1977 15(1), p.1-10, 9 refs.

Keratinophilic fungi were isolated from samples of soil collected in the extremity of Chile, in Southern Shetland and Antarctic continent. Two new species, *Microsporum magellanicum* and *Cunninghamella antarctica* are described. *Microsporum magellanicum* is characterized by verrucose or verruculose clavate macroconidia predominantly uniseptate, 4.8-7.2 microns x 14.4-21 microns. *Cunninghamella antarctica* has conidiophores usually verticillately, pseudoverticillately and sympodially branched; and giobose conidia with evident spines, 12.8-16 microns in diameter. (Auth.)

B-19313

Tierney, T.J., **Disease and injury in the southern elephant seal,** *Australian veterinary journal,* Feb. 1977 53(2), p.91-92, 12 refs.

Disease and injury was recorded in 170 tagged southern elephant seals *(Mirounga leonina)* on the antarctic continent. Trauma due to interspecific predation was the most common disorder. No small seals were observed with lesions attributable to this in the antarctic population. This finding differs from data recorded in a subantarctic (Macquarie Island) population where seals of all class sizes exhibit lesions due to interspecific trauma. No external parasites were observed in the antarctic population. (Auth.)

B-19314

Parker, B.C., Howard, R.V., **First environmental impact monitoring amd assessment in Antarctica. The Dry Valley Drilling Project,** *Biological conservation,* Nov. 1977 12(3), p.163-177, 14 refs.

The development of an environmental impact assessment matrix, adapted from Leopold et al (1971) to estimate probable impact of a major geological drilling project in Antarctica, is described. The matrix includes five recovery time intervals and impact probability. Methods for environmental impact monitoring have emphasized microbiology of air and soil in this unusual region of sparse native soil and water microbial communities, such that preaudits, audits and postaudits could be used to monitor impact and recovery. Data obtained have enabled revision and improvement of prediction for the impact matrices. (Auth.)

B-19326

Hochachka, P.W., **Pulmonary metabolism during diving: conditioning blood for the brain,** *Science,* Nov. 25, 1977 198(4319), p.831-834, 18 refs.

During experimental diving by the awake Weddell seal, blood glucose concentration falls consistently. A large fraction of the glucose consumed from the central circulating blood appears as lactate. During diving, the lung utilizes blood lactate in preference to blood glucose as a source of both carbon and energy, and it is able to release glucose into pulmonary venous blood to supplement the supply available for brain metabolism. (Auth.)

B-19332

Bernasconi, I., D'Agostino, M.M., **Antarctic echinoderms. III. Ophiuroidea 1. Ophiuroidea of the extreme north of the Antarctic Peninsula** [Equinodermos antárticos III. Ofiuroideos 1. Ofiuroideos del extremo norte de la Peninsula Antártica], *Buenos Aires. Museo Argentino de Ciencias Naturales "Bernardino Rivadavia." Instituto Nacional de Investigación de las Ciencias Naturales. Revista. Hidrobiología,* 1974 4(2), p.81-133 + 13 plates, In Spanish with English summary. 17 refs.

This paper includes the study of the ophiuroids collected by the 1964-69 Antarctic Expeditions in South Shetland Islands. 576 specimens were observed, distributed in 5 families, 2 subfamilies, 15 genera and 23 species. These are: *Astrotoma agassizii; Astrohamma tuberculatum; Amphiura belgicae, A. lymani, A. eugeniae; Amphioplus peregrinator, A. acutus, A. affinis; Ophionotus victoriae; Ophiurolepis martensi, O. granulitera, O. brevirima, O. tumescens, O. gelida; Amphiophiura gibbosa; Ophiosteira antarctica; Ophiomastus serratus; Ophiura rouchi; Ophioperla koehleri; Ophioceres incipiens; Ophiospharte gigas; Ophiacantha antarctica* and *Ophiactis amator.* They are all antarctic specimens, apparently of circumpolar distribution, except the following ones which are also subantarctic: *Ophiurolepis martensi, Amphiura eugeniae, Amphiura belgicae, Astrotoma agassizii* and *Ophiactis amator.* (Auth. mod.)

B-19339

Jones, N.V., Williams, I.C., ***Paramonostomum signiensis* n.sp. (Trematoda: Notocotylidae) from the Sheathbill, *Chionis alba* (Gmelin), at Signy Island, South Orkney Islands,** *Journal of helminthology,* 1969 43(1/2), p.53-57, 7 refs.

Twelve Sheathbills were collected in Apr., 1967 at Signy Island, preserved in deep freeze, and examined for parasites. Five of the Sheathbills were found to be infected with a new species of notocotylid trematode, namely *Paramonostomum signiensis* n.sp., which is described and considered in relation to other species of *Paramonostomum* Lühe, 1909.

B-19340

Jones, N.V., Williams, I.C., **Trematode parasites of the Sheathbill, *Chionis alba* (Gmelin), from Signy Island, South Orkney Islands,** *Journal of helminthology,* 1968 42(1/2), p.65-80, 38 refs.

This paper reports on two species of digenetic trematodes, namely *Gymnophallus deliciosus* (Olsson, 1893) and *Notocotylus chionis* Baylis, 1928, from Sheathbills collected on Signy Island, South Orkney Islands, in July and Oct. 1965. The birds were preserved in deep-freeze and later examined for parasites. An account of the cestode parasites of these birds has been given previously (Jones & Williams, 1967). Although the Sheathbill is a prominent member of the avifauna of the Scotia Arc and Grahamland peninsula, the only previous account of trematodes from this bird is Baylis' (1928) description of *Notocotylus chionis* Baylis, 1928 and *Paramonostomum ionorne* Travassos, 1921 from the caeca of a Sheathbill sent to the British Museum (Natural History) from Patagonia.

B-19341

Groscolas, R., Clement, C., **Utilization of energy reserves during the breeding fast in the Emperor penguin, *Aptenodytes forsteri*** [Utilisation des réserves énergétiques au cours du jeûne de la reproduction chez le Manchot empereur, *Aptenodytes forsteri*], *Académie des sciences, Paris. Comptes rendus hebdomadaires des séances. Série D,* Jan. 19, 1976 282(3), p.297-300, In French with English summary. 10 refs.

During the breeding fast of the Emperor penguin the lipid and protein stores are steadily used to meet the metabolic needs; they represent respectively 93 and 7% of the energy production in the animal. The role of the glucid stores are quantitatively negligible. Loss of tissue water represents 35.3% of body weight loss. Increased weight loss below 20 kg, a "critical weight", is associated with a conversion to protein catabolism when lipid supplies are exhausted. These results allow the estimation of the metabolism when the body weight loss is considered in this antarctic penguin. (Auth.)

B-19342

Jones, N.V., Williams, I.C., **Nematode and acanthocephalan parasites of the Sheathbill, *Chionis alba* (Gmelin), at Signy Island, South Orkney Islands and a summary of host parasite relationships in the Sheathbill,** *Journal of helminthology,* 1969 43(1/2), p.59-67, 25 refs.

From the authors' studies it seems that three elements in the helminth fauna of the Sheathbill at Signy Island can be recognized. First, those species for which the Sheathbill is an abnormal host where the parasite either dies or fails to achieve sexual maturity, for example the nematode *Phocanema decipiens* and the acanthocephalan *Corynosoma hammani.* Second, those species which are acquired in the South Orkneys by juveniles as well as by adults, such as *Lateriporus australis* and *Paramonostomum signiensis.* Third, those species which have not been found in juvenile Sheathbills and may, therefore, be acquired outside the South Orkneys, such as *Gymnophallus deliciosus, Notocotylus chionis* and *Nototaenia fileri.* Only further study can lead to a clarification of the tentative interpretation suggested here.

B-19364

Millard, N.A.H., **Hydroids from the Kerguelen and Crozet shelves, collected by the cruise MD-03 of the *Marion Dufresne*,** *South African Museum, Capetown. Annals,* Apr. 1977 73(1), p.1-47, Refs. p.46-47.

Thirty-four species of hydroids are described from the Kerguelen and Crozet groups of islands, including two new species: *Halecium dufresneae* and *Zygophylax crozetensis.* Among them are five cosmopolitan species. The rest show affinities partly with the cold-tem-

perate Magellan Region of South America and partly with Antarctica. The fauna is considered to be subantarctic in nature. (Auth.)

B-19365

Antarctic wildlife sounds, *Recorded sound.* 1973 No.50-51, p.201.

The complete collection of Dr. W.L.N. Tickell's antarctic tape recordings of the sounds of a number of birds and of the elephant and fur seals are available at the British Library of Wildlife Sounds. Ian Stirling's recordings of the fur seal are also held there. Calls of penguins, albatrosses, petrels, gulls, and a number of other birds are included in the collection.

B-19378

Crooker, A.R., Jr., **First record of *Ereynetes macquariensis* (Acarina: Ereynetidae) from Anvers Island, Antarctic Peninsula,** *Pacific insects,* Oct. 28, 1977 17(4), p.489, 3 refs.

Ereynetes macquariensis is reported from Anvers Island. This represents the first record of this species from the Antarctic Peninsula. (Auth.)

B-19379

Graffe, G., **Temperature of the biotic medium and its effect on Cercaria; considerations and experiments in relation to observations in Antarctica** [Die Temperatur des Lebensraumes und ihre Wirkung auf Cercarien; Überlegungen und Versuche im Anschluss an Beobachtungen in der Antarktis], *Parasitologische Schriftenreihe,* Nov. 1971 Vol.21, p.151-156, In German. 12 refs.

The purpose of this study was to determine the extent to which digenetic trematodes are able to adapt to low temperatures in the Antarctic during their larval development, considering that the temperature required for ontogeny in temperate zones is at least 10-15C. Observations in the Antarctic show that larval development occurs below that temperature. The absence of ontogeny below 10-15C in temperate zones is believed to be due to some temperature-controlled triggering mechanism aimed at bypassing cold seasons that hold little prospect of successful transfer to another host.

B-19382

Despin, B., **Comparative growth of penguin chicks in the genus *Pygoscelis*** [Croissances comparées des poussins chez les Manchots du genre *Pygoscelis*], *Académie des sciences. Paris. Comptes rendus hebdomadaires des séances. Série D,* Oct. 31, 1977 285(11), p.1135-1137, In French with English summary. 6 refs.

Growth curves of chicks of the genus *Pygoscelis* are compared, using the Gompertz equation. Relations between growth fluctuations and the behavior peculiar to each species are examined. (Auth.)

B-19383

Barré, H., **Role of the photoperiod and of alimentation in the determinism of molt in the chicks of the King penguin *(Aptenodytes patagonicus* J.F. Miller) and Macaroni penguin *(Eudyptes chrysolophus* Brandt)** [Rôle de la photopériode et de l'alimentation sur le déterminisme de la mue chez les Poussins de Manchot royal *(Aptenodytes patagonicus* J.F. Miller) et de Gorfou macaroni *(Eudyptes chrysolophus* Brandt)], *Académie des sciences. Paris. Comptes rendus hebdomadaires des séances. Série D.* Oct. 31, 1977 285(11), p.1131-1134, In French with English summary. 10 refs.

With King penguin and Macaroni penguin chicks, fasting stops the molt before or after it has been started. Thus alimentation is a necessary factor in the determinism of the molt, but the primordial role devolves on the photoperiod. (Auth.)

B-19391

DeWitt, H.H., **Revision of the Antarctic and southern genus *Notothenia* (Pisces, Nototheniidae),** Stanford University, 1966, 469p., University Microfilms order No.66-14,649, Ph.D. thesis. Refs. p.445-469.

As the species of *Notothenia* have been treated almost wholly in the pioneer expedition reports of Antarctic and other far southern expeditions, the present study was undertaken for the following purposes: (1) to determine the number of species included in the genus as recognized at the time the work was begun; (2) to review the literature critically in order that problems of the proper allocation of type and other previously reported material be made, and to bring together existing information about the genus; (3) to prepare, where possible, more adequate descriptions of the species than had been published previously, together with an analytical key for aid in their identification; and (4) to determine whether any new data obtained could be used in adding to existing ideas of relationships and distributions.

B-19393

Peiffer, S., **Penguin *(Aptenodytes forsteri)* myoglobin. A 70 residue N-terminal sequence,** *FEBS letters,* Dec. 1973 37(2), p.295-297, 12 refs.

The N-terminal sequence of penguin myoglobin obtained by the chymotryptic, tryptic, and CNBr peptides overlaps and by automatic sequential degradation is presented in a table. When compared with all other species studied, penguin protein presents 10 substitutions never observed before. It appears that the penguin protein is markedly different from mammalian myoglobins. Studied in relation to sperm whale myoglobin, penguin replacements occur both at external and internal positions of the molecule. The variable residues observed among the two proteins can be considered as differing most frequently by a single point mutation.

B-19394

Monier, C., Schnek, A.G., Dirkx, J., Leonis, J., **Penguin hemoglobin *(Aptenodytes forsteri).* A 45 residue N-terminal sequence,** *FEBS letters.* Oct. 1973 36(1), p.93-95, 15 refs.

The N-terminal sequence of the alpha-chain of penguin hemoglobin is indicated in a table. The replacements observed when one compares the first 45 residues of the penguin of the chicken alpha-chain to the corresponding human sequence are also shown. The N-terminal parts of the alpha-chains seem relatively variable (13-15 substitutions on 45 residues).

B-19396

Longton, R.E., **Classification of terrestrial vegetation near McMurdo Sound, continental Antarctica,** *Canadian journal of botany,* 1973 51(12), p.2339-2346, 27 refs.

Eleven plant associations are reported from the McMurdo Sound region of continental Antarctica, and they are grouped in the Alga, Fruticose and Foliose Lichen; Crustaceous Lichen; and Short Moss Turf and Cushion subformations of the Antarctic Non-vascular Cryptogam Tundra formation. Their inclusion necessitated only minor modification of a vegetation classification developed in the maritime Antarctic. The most widespread vegetation consisted of sparsely developed communities of turf- and cushion-forming mosses in habitats ranging from dry cinder slopes to sand and gravel in seepage areas and by meltwater streams. The bryophyte colonies seldom exceeded 4 cm in depth, and although total plant cover within the communities locally reached 85%, it was more frequently under 5%. The *Sar-*

coneurum association appeared to tolerate more arid conditions than the *Bryum* association, whose communities occasionally merged with algal associations occupying certain of the streams. Exposed rock habitats normally supported at most small scattered thalli of crustaceous lichens, well-developed lichen communities being rare. (Auth.)

B-19399

Walsh, J.J., **Statistical analysis of the phytoplankton community within the Antarctic Convergence,** Coral Gables, Fla., University of Miami, 1969, 229p., University Microfilms order No.70-18,174, Ph.D. thesis. Refs. p.91-100.

Data on the distribution of phytoplankton standing crop, species diversity, and community diversity were collected in five transects across the Antarctic Convergence. Computer analysis of the interaction of phytoplankton with physical and chemical habitat variations was made. Definition and location of the upper water masses within each transect are presented for areas south of the Convergence, Antarctic Surface Water and Antarctic Circumpolar Water; within the Convergence, Antarctic Intermediate Water, and Pacific Upper Deep Water; and north of the Convergence, Subantarctic Surface Water, Antarctic Intermediate Water, and Pacific Deep Water. Distributions of the physical and chemical habitat variables, light, temperature, salinity, density, relative stability, oxygen, phosphate, nitrate, silicate, and trace elements, are discussed. The interdependence of each habitat variable is then analyzed.

B-19410

Polonskaia, M.N., Nozdrachev, S.I., **On the biological value of krill paste,** *Hygiene and sanitation.* July-Sep. 1971 36(7-9), p.370-373, 6 refs. Translated from Gigiena i sanitariia No.9.

The author made a comparative assessment of paste made of small ocean shrimps and that made of beef and studied the effect of these products on the increase of body weight of experimental animals, on the content of free amino-acids in their blood and liver and on the activity of oxidation-reduction ferments. The experiment was carried out on 120 male albino rats weighing 80 to 90 g for a period of 3 months. The animals that received a diet containing shrimp paste presented a high increase of body weight, a rise in the content of free amino-acids and in the activity of oxidation-reduction ferments. Consequently, shrimp paste may be recommended as a new food product serving as an additional source of albumin and other biologically active substances in food rations. (Auth.)

B-19411

Shaughnessy, P.D., **Serum protein variation in southern fur seals, *Arctocephalus* spp., in relation to their taxonomy,** *Australian journal of zoology.* Sep. 1970 18(3), p.331-343, Refs. p.342-343.

Examination of serum samples from *Arctocephalus* spp. from southern Australia, New Zealand, and Macquarie I. revealed six transferrin types, which were assumed to be the products of four allelic genes, and two phenotypes of a haem-binding protein. Seals from South Neptune Is., Cape du Couedic, and the Recherche Archipelago were identical on these criteria; while those from Victoria were identical with those of Tasmania. This division is consistent with previous conclusions based on skull characters. The names suggested for these two groups were *A. forsteri* and *A. doriferus*, respectively. Transferrin types of New Zealand and Macquarie I. *A. forsteri* were not identical with those of Australian *A. forsteri*. It is suggested that fur seals may have been exterminated from South Australia and Western Australia and that recolonization was from New Zealand. Alternatively, these differences may indicate the existence of more than one species in these populations. (Auth.)

B-19412

Bernasconi, I., ***Astrotoma agassizii* Lyman, viviparous species from the South Atlantic (Ophiuroida, Gorgonocephalidae)** [*Astrotoma agassizii* Lyman, especie vivipara del Atlántico Sur (Ophiuroidea, Gorgonocephalidae)], *Physis.* May 31, 1965 25(69), p.2-5, In Spanish with English summary. 6 refs.

Based on three specimens, *Astrotoma agassizii* is determined to be viviparous and hermaphroditic. It is described, synonymies given, and geographic distribution discussed. The animal is found in antarctic and subantarctic waters north to 42S in the Pacific and 39S in the Atlantic.

B-19413

Spellerberg, I.F., **Capturing and immobilizing McCormick skuas,** *American Veterinary Medical Association. Journal.* Oct. 1, 1969 155(7), p.1040-1043, 7 refs.

McCormick skuas were captured by use of a wire cage with a swing door, baited with meat. Once caught, the birds were immobilized to allow detailed external examination, banding, and taking of blood samples. Pentobarbital sodium administered orally was found to be a convenient and practical narcotizing agent where there was one operator handling several birds an hour. The long recovery period of up to 3 hours was overcome in some instances by having suitable containers to confine birds until fully recovered, or if necessary, administering tepid water to cause regurgitation. Thiopental sodium administered intravenously was more efficient than pentobarbital sodium, but required two operators; one to hold the bird and one to administer the drug. It was concluded that the choice of the drug depended on the number of birds being handled and the number of operators available. (Auth.)

B-19416

Inoue, K., **Effect of temperature on growth of obligately psychrophilic bacteria,** *Journal of general and applied microbiology.* Apr. 1977 23(2), p.53-63, 10 refs.

Effect of temperature on the growth of five obligately psychrophilic bacteria and behavior of *Curtobacterium psychrophilium* strain 27-O-b at elevated temperatures were studied. The microorganisms were isolated from samples collected in Antarctica. Most of the obligate psychrophiles showed lower growth activities than a facultative psychrophile at lower temperature. Arrhenius plots of the growth of most of the obligate psychrophiles were linear from a temperature little below their optimum growth temperature to 0 deg. However, there was a deviation in Arrhenius plots of *Cytophaga antarctica* strain 16-O-d and a facultative psychrophile, *Pseudomonas fluorescens* strain 76-O-a. Therefore, it seems unreasonable to characterize psychrophiles only from the points of growth activities at lower temperature and/or a pattern of the Arrhenius plot. When *C. psychrophilium* was transferred to elevated temperatures after preincubation at the optimum growth temperature of 9 deg, it exhibited faster growth for the first few hours than at 9 deg, and then the growth ceased. (Auth.)

B-19417

Inoue, K., **Some physiological changes of an obligate psychrophile at supermaximum growth temperatures,** *Journal of general and applied microbiology.* Apr. 1977 23(2), p.65-75, 21 refs.

Some physiological changes during the growth of a psychrophile, *Curtobacterium psychrophiliun*, at supermaximum growth temperatures were studied. The psychrophile was isolated from a sample collected in Antarctica. Leakage of intracellular materials and cell lysis at 20 deg were two to three times greater than those at 9 deg, which is the optimum growth temperature of this bacterium. Decrease of viability at 20 deg was ten thousand to hundred thousand times of that at 9 deg. Thermogram at 20 deg showed one-directioned decrease.

Oxygen-uptake was miximum at 15 deg and completely lost at 40 deg. Total amount of ATP began to decrease from 3 hr later at 20 deg, while the bacterium grew more rapidly than at 9 deg. Incorporation of H3-methionine stopped simultaneously with cessation of growth, and incorporation of C14-uracil and H3-thymidine ceased. On the basis of these facts, this bacterium is considered to be heat labile in multiple points, though protein synthesis seems to be primarily inhibited at 20 deg. (Auth.)

B-19421

Warham, J., **Wing loadings, wing shapes, and flight capabilities of Procellariiformes,** *New Zealand journal of zoology,* Feb. 1977 4(1), p.73-83, 48 refs.

Among 48 procellariiform species, including some antarctic species wing loading increases with increasing body weight. Mean total wing area varies allometrically with mean body weight: log10 wing area sq cm = 20.42 log10 body weight (g)0.588. The power exponent is significantly less than the 0.666 value expected from from the law of similitude. *Pelecanoides,* with wings highly modified for diving, is an exception to the above trend. With increasing size the petrel wing becomes longer and narrower, aspect ratios increasing from about 6.5 in small storm petrels to about 15.6 in the giant albatrosses. Elongation is accompanied by changes in the proportions of the arm bones; the terminal segment, composed of the manus and primary feathers, becomes proportionately smaller and the inner segments, supported by the humerus and radio-ulna, proportionately larger with increasing body size. Some ecological correlates of interspecific differences in wing loadings and shapes are discussed. (Auth.)

B-19446

Strange, I., **Wildlife in the Falklands,** *Oryx,* Jan. 1972 11(4), p.240-257.

The Falkland Islands have a long history of depredations by man —whaling, sealing, taking of penguins and eggs, and most recently, the destruction of the natural vegetation, primarily tussac grass, by domestic animals. The present-day threats are erosion due to lack of vegetation on sea slopes, renewed interest in sealing, agitation for destruction of the wild geese, which program if carried out with chemicals could cause untold damage, and continuing penguin-egging. The islands have a potential in fish and seaweed that has not been tapped; if a more diversified economy could be developed, it would benefit man and wildlife.

B-19447

Kuwano, K., Osawa, Y., Sekiyama, N., Tsukui, A., Mitamura, T., **Inactivation of enzymes and chemical change in antarctic krill as a result of boiling,** *Japanese Society for Food and Nutrition. Journal (Eiyo to shokuryo),* 1976 29(1), p.35-38, In Japanese with English summary. 5 refs.

Intact and boiled krill extracts were studied for activity of protease and tyrosinase-like enzyme, chemical compositions and yields. The following results were obtained. Both enzyme activities were found to be 10-20% of initial values in the extract from the krill boiled in a 3% NaCl solution for 5 minutes. After 15 minutes boiling, the activity of both enzymes were negligible in the extract. Boiling for 5 minutes reduced the yield of the product to 91%, crude protein to 83%, and crude fat to 77% of initial values. In the case of 15 minutes boiling, the yield, crude protein and crude fat decreased to 83%, 68% and 56%, respectively. The crude ash content was increased up to 6.4% by boiling for 15 minutes. These results suggest that a high quality krill product can be obtained by treating a raw material in boiling sea water for 5 minutes. (Auth.)

B-19448

Johnston, I.A., Walesby, N.J., **Molecular mechanisms of temperature adaptation in fish myofibrillar adenosine triphosphatases,** *Journal of comparative physiology,* 1977 119B(2), p.195-206, 30 refs.

Studies have been carried out on the Mg2+Ca2+-myofibrillar ATPase from the muscles of fish adapted to different environmental temperatures. The thermal stability of the ATPase is strongly correlated with mean habitat temperature. Activities of Antarctic fish ATPases are significantly higher at low temperatures than those of temperate and tropical water species. The effects of ionic strength on ATPase activity have also been studied. The Gibbs free energy of activation was found to increase and enzyme activity decrease with increasing ionic strength within the physiological temperature range of each species. Significantly lower values of around 1 Kcal/mole, are obtained for the ATPase of cold-adapted compared to tropical fish. Enthalpic and entropic activation energies were also reduced in the cold adapted ATPases. It is postulated that the reduction of the enthalpic activation term in the cold adapted enzyme confers the advantage of reducing the temperature sensitivity of the rate limiting step, thus partly compensating for the low heat content of the cellular environment. Possible molecular mechanisms of temperature compensation in fish myofibrillar ATPases are discussed. (Auth.)

B-19450

Paulin, C.D., Sagar, P.M., **Diurnal rhythm of activity by the Adelie penguin,** *Notornis,* Sep. 1977 24(3), p.158-160, 5 refs.

A diurnal rhythm of the numbers of Adelie penguins leaving the rookery was observed at Cape Bird, Ross I. No diurnal rhythm in numbers of birds returning to the rookery was observed. (Auth.)

B-19451

Sagar, P.M., **Birds of the Western Chain Snares Islands, New Zealand,** *Notornis,* Sep. 1977 24(3), p.178-183, 11 refs.

Birds observed during a visit to Rima Islet of the Snares Western Chain on Nov. 21, 1976 were counted. The results of previous landings on the five main islets of the Western Chain are discussed and a distribution of the four breeding species (Snares Crested Penguin, Slavin's Mollymawk, Snares Cape Pigeon and Fulmar Prion) is proposed. Their breeding cycles are discussed. (Auth.)

B-19455

Jörgensen, P.M., **Foliose and fruticose lichens from Tristan da Cunha,** *Norske videnskaps-akademi i Oslo. Matematisk-naturvidenskapelig klasse. Skrifter, Ny serie.* 1977 No.36, 40p., 59 refs.

Eighty-font foliose and fruticose lichen species are recorded, 69 which are new to the islands. Four new species are described: *Parmeliella parvula, Ramalina elegantula, Usnea nigropapillosa,* and *Usnea vermicularis.* The lichenflora has a pronounced South American affinity and appears to be poor in endemic species. (Auth.)

B-19456

Gulland, J., **Living resources of Southern Ocean,** *Marine policy,* Jan. 1977 1(1), p.79-80.

Report is made of the SCAR symposium on living resources of the Southern Ocean, held at Woods Hole, Mass., Aug. 17-24, 1976. The purpose of the meeting was to review present knowledge of the resources and to prepare a proposal for cooperative studies in the area —now known as the BIOMASS Program (biological investigations of marine antarctic systems and stocks). Detailed reports were presented on German and Polish krill expeditions. In addition, information was presented on seven groups of living resources: mammals,

birds, fish, cephalopods, krill, large crustaceans, and seaweeds. At the end of the symposium a 150-page proposal for future research was forwarded to the various interested bodies to be considered at their next appropriate meeting.

B-19457

Gambell, R., **Whale conservation: role of the International Whaling Commission,** *Marine policy.* Oct. 1977 1(4), p.301-310, 18 refs.

Gross overcatching of whales in the Antarctic resulted in a series of international agreements in the 1930's designed primarily to control oil output and so to ensure a stable market. These agreements led to the International Convention for the Regulation of Whaling, signed in 1946. The interests of the industry were paramount in setting catch quotas, so that the major stocks were seriously depleted. A more conservative approach initiated in 1965 has led to the present management policy of the IWC which is aimed at bring all whale stocks to the levels providing the maximum sustainable longterm yields. The author analyzes the issues and implications surrounding these developments. (Auth.)

B-19458

Birnie, P., **Whale stocks—exploitation or moratorium,** *Marine policy.* Oct. 1977 1(4), p.348-350, 1 ref.

The meeting on whaling held at Edinburgh, U.K., May 13-14, 1977 opened with cases for and against continued whaling by R. Gambell (International Whaling Commission) and J. Gordon-Clarke (Friends of the Earth), respectively. Dr. Gambell reviewed the history of whaling and the strengthening of the International Whaling Commission (IWC), resulting in the use of the maximum sustainable yield (MSY) as a basis for whale protection and management. He coneluded that the whale is no longer endangered. Ms. Gordon-Clarke ehallenged this assumption, stressing that the MSY is an unreliable criterion and the 10% margin allowed for error is insufficient. She concluded that the present IWC policies will lead to the extinction of whales, and that the IWC should abandon MSY and allow much greater safety margins in its quotas. Dr. Gambell spoke further about the antarctie ecosystem and the complex interrelationship of animal populations, the krill food supply, etc., and urged that further studies be undertaken to better understand the ecosystem. Further papers served to underline Dr. Gambell's points about lack of evidence and the controversies that surround the theories built upon the evidence that exists. The author outlined the loopholes in the international legal system that had led to overexploitation of whales. The symposium served to publicize in a serious way the variety of strongly felt divergent opinions concerning the rights and wrongs of continued whaling.

B-19461

Condy, P.R., **Ross seal *Ommatophoca rossi* (Gray 1850), with notes from the results of surveys conducted in the King Haakon VII Sea, Jan./Feb. 1974-76,** Proceedings of a symposium on Endangered Wildlife in Southern Africa, organized by the Endangered Wildlife Trust, at the University of Pretoria, July 1976, Unpublished, 1977, 16p., 21 refs.

This is a review of the available material and a summary of information concerning the least-known of the antarctic seals, the Ross seal. Tables giving density estimates, estimates of regional and total population size of all species of antarctic seals, body measurements and body mass, and mass and measurements of internal organs for the Ross seal are included. The author discusses also group size, feeding habits, breeding biology, mortality, diurnal rhythm and haul-out patterns, distribution in relation to ice conditions, and conservation measures to protect the most rarely seen of the antarctic seals.

B-19471

Clarke, A., **Lipid class and fatty acid composition of *Chorismus antarcticus* (Pfeffer) (Crustacea: Decapoda) at South Georgia,** *Journal of experimental marine biology and ecology.* Aug. 1977 28(3), p.297-314, 51 refs.

The major lipids of the Antarctic benthic hippolytid prawn *Chorismus antarcticus* (Pfeffer) were phospholipid and triacylglycerol. There were small amounts of free sterol and alkyldiacylglycerol and traces of free fatty acid, sterol ester, partial glycerides and, occasionally, wax ester. Triacylglycerol and other neutral lipids were stored primarily in the hepatopancreas whereas most of the phospholipid was contained in the abdominal muscle. Fluctuations in total lipid content appeared to be caused predominantly by variations in the amount of triacylglycerol. Carotenoid content and composition were similar to those of other marine decapods. Egg lipid was almost entirely triacylglycerol and phospholipid, the triacylglycerol mostly as free globules, the phospholipid and carotenoid largely bonded to protein. The dominant phospholipids were choline and ethanolamine phosphoglycerides, both rich in plasmalogens; there were smaller amounts of serine phosphoglyceride, sphingomyelin, and lyso-ethanolamine phosphoglyceridc, and traces of lyso-choline phosphoglyceride, phosphatidic acid, cardiolipin, inositol phosphoglyceride, and several glycolipids. Comparison with other crustaceans indicated that adaptation to the Antarctic marine environment has little effect on the lipid composition. (Auth. mod.)

B-19472

Heywood, R.B., **Limnological survey of the Ablation Point area, Alexander Island, Antarctica,** *Royal Society of London. Philosophical transactions,* 1977 Vol.279B, p.39-54, 13 refs.

The ice-free area around Ablation Point is of particular limnological interest. Numerous ponds and pools lie on coastal moraines and large, permanently ice-covered lakes lie in the valleys. Two of the lakes are unusual in that they are in contact with seawater from George VI Sound which is covered by an ice shelf, 100-500 m thick, and which separates Alexander Island from the Antarctic mainland. Evidence for the existence of a marine biome 100 km from the open sea was obtained from one lake. Freshwater biological samples added new genera to Antarctic lists, extended the known range of species, and illustrated the important role of isolation in the determination of antarctic biocoeneses. (Auth.)

B-19473

Everson, I., **Antarctic marine secondary production and the phenomenon of cold adaptation,** *Royal Society of London. Philosophical transactions,* 1977 Vol.279B, p.55-66, 44 refs.

For several years marine biologists of British Antarctic Survey have been studying the nearshore communities at Signy Island and South Georgia. Most of these studies have been continued throughout the year so that variations in production in both the long and short term have been investigated. In this paper changes in the rate of growth of selected crustacean, molluscan and fish species are considered throughout their life histories. Variations in growth rates are considered in relation to temperature, food availability and mode of life and comparisons are made with species from outside antarctic waters. (Auth.)

B-19474

Payne, M.R., **Growth of a fur seal population,** *Royal Society of London. Philosophical transactions,* 1977 Vol.279B, p.67-79, 15 refs.

The Antarctic fur seal *Arctocephalus gazella* is a polygynous Otarid in which a single pup is produced annually by cows over the age of 2 years. Following exploitation to the verge of extinction, a small breeding colony was discovered at Bird Island, South Georgia,

in the 1930's. Up to 10,000 pups a year were produced in the early 1960's and by 1975 the figure had reached an estimated 90,000. The rapid population increase has resulted in the colonization of extensive breeding areas on the adjacent mainland of South Georgia with incipient colonies springing up on more distant parts of the island, and also in the South Sandwich, South Orkney and South Shetland Islands. Age determinations from the teeth of 195 breeding cows reveal a low mean age, early first breeding and a predominance of the younger age groups relative to the age structure of a stable population of northern fur seals *Callorhinus ursinus*. Annual adult cow survival is estimated at 89.8%, while that of first-year animals is about 64.5%. A decline in the rate of population increase is forecast within ten years and an outline for investigating the most likely factors influencing such a change is suggested. (Auth.)

B-19475

Laws, R.M., **Seals and whales of the Southern Ocean,** *Royal Society of London. Philosophical transactions.* 1977 Vol.279B, p.81-96, 57 refs.

Seasonal changes in the environment in the Southern Ocean are marked and food available to baleen whales is very much greater in summer. Ecological interactions of the consumers, principally in relation to krill *Euphausia superba*, are discussed and attention drawn to some of the ways in which ecological separation is achieved, both within and between species. Estimates of abundances, biomasses and food requirements are given for the seals and large whales. The original numbers of whales in the Antarctic were far greater than in other oceans, but the stocks have been severely reduced by whaling. This may have increased the availability of krill to other consumers by as much as 150 million tons annually. Increased growth rates, earlier maturity and higher pregnancy rates have been demonstrated for baleen whale species, and earlier maturity for the crabeater seal. While it has not been possible to demonstrate increases in the populations of any of these species, the stocks of fur seals and penguins have been monitored and show significant population increases. A key question is whether the original balance of this ecosystem can be regained with appropriate management. (Auth.)

B-19482

Block, W., **Oxygen consumption of the terrestrial mite *Alaskozetes antarcticus* (Acari: Cryptostigmata),** *Journal of experimental biology.* 1977 Vol.68, p.69-87, 35 refs.

Analysis of 148 measurements of individual respiration rate showed that although respiration was linearly related to live weight on a double log 10 scale, there were significant differences between rates at 0, +5 and +10C. Proto- and deutonymphal metabolic rates were higher than other stages, especially at +10C. Q10 values ranged from 2.07 to 3.83 over 0 to +10C. Equations relating individual respiratory rate to live weight and temperature for *A. antarcticus*, and metabolic rate to temperature for 10 species of Antarctic terrestrial invertebrates were developed. Comparison with temperate data indicated considerable cold adaptation in the Antarctic species with 3-5 times increased metabolism. It was calculated that 78-82% of the energy assimilated may be used in respiration by *A. antarcticus*. (Auth.)

B-19490

Samsel, G.L., Jr., **Limnology of select fresh water systems near the Antarctic Peninsula—field and laboratory studies,** Blacksburg, Virginia Polytechnic Institute and State University, 1971, 131p., University Microfilms order No.71-16,532, Ph.D. thesis. Refs. p.119-126.

Primary productivity and nutrients were compared in two lakes of different trophic levels (Skua and Humble Lakes, Anvers Island) during the Antarctic summer of 1969-70. Striking differences in nutrient concentration are described. Microecosystems containing native Antarctic algae and bacteria were established to determine effects of various environmental factors on algal primary productivity rates for each lake. The microbial communities of the two lakes, while different in species composition, gave the same responses to nutrient additions when transplanted reciprocally into the foreign artificial microenvironment; this result further demonstrated that the nutrient composition, rather than the community structure formed the main basis for the differences observed in these two natural Antarctic ecosystems. The majority of the Antarctic algae identified from the field were placed in the division chlorophyta with numerous genera in the cyanophyta and a relatively few algae in the chrysophyta. At least 90% of all species identified were cosmopolitan, with only four species endemic to the Antarctic coastal area.

B-19497

Kozlov, A.N., **Characteristics of the energy balance in three Notothenia species** [Nekotorye osobennosti energeticheskogo balansa Nototeniĭ trekh vidov], *Moscow. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut morskogo rybnogo khoziaĭstva i okeanografii. Trudy.* 1975 96(4), p.92-100, In Russian with English summary. 12 refs.

A comparative study of annual energetic budgets in three Antarctic species of Notothenia has been made. Expenditure on growth, energetic metabolism, and generative metabolism is estimated. Coefficients K1 and K2 are calculated. It is noted that the intensity of synthetic processes is higher in *N. rossi marmorata* than in *N. neglecta* and *N. gibberifrons*. *N. marmorata* utilizes more efficiently food for growth in the fifth year of life since it starts feeding on highly-nutrient krill. The generative metabolic rate is also high in this species e.g., expenditure on generative metabolism constitutes about 13% of the annual budget in females and about 8% in males, whereas in two other species the corresponding values will be 6-9% and 2-4%. The metabolic peculiarities in three species of Notothenia are associated with their ecology. (Auth.)

B-19499

Hasle, G.R., **Some marine plankton genera of the diatom family Thalassiosiraceae,** *Nova Hedwigia. Beihefte.* 1973 No.45, Symposium on Recent and Fossil Marine Diatoms, 2nd, London, Sept. 1972. Proceedings, p.1-68, Refs. p.41-46. Includes 18 plates.

Morphology, taxonomy and distribution of the marine plankton genera *Lauderia* Cleve, *Porosira* Jorg., *Detonula* Schütt, *Bacterosira* Gran, and *Minidiscus* Hasle are discussed. *Schroederella delicatula* (H. Perag.) Pav. is regarded as conspecific with *Detonula pumila* (Castr.) Schütt, and the genus *Schroederella* Pav. is rejected. Morphologic and ecologic features of the family Thalassiosiraceae Lebour *(sensu)* (Hasle) are discussed, comparing this family with other centric diatoms, particularly planktonic forms. Emended descriptions are given for *Lauderia annulata* Cleve, *Porosira glacialis* (Grun.) Jorg., *Porosira pseudodenticulata* (Hust.) Zhuse, *Detonula confervacea* (Cleve) Gran, *Detonula pumila* and *Bacterosira fragilis* Gran. The *Porosira* spp. are distributed in the Antarctic and on subantarctic islands. (Auth. mod.)

B-19506

Derenne, P., Mougin, J.L., **Craniometric data on wild rabbits and feral cats of Hog Island, Crozet Archipelago** [Données craniométriques sur le lapin et le chat haret de l'île aux Cochons, archipel Crozet], *Mammalia.* 1976 40(3), p.495-516, In French with English summary. 19 refs.

This craniometrical study deals with the cats and rabbits living since the second half of the nineteenth century on subantarctic Hog Island, Crozet archipelago. No autochthonous population lived previously on the island, and no new introduction has been made subsequently. The Hog Island rabbits' skulls have gone through an evolution similar to that of their congeners of the Kerguelen Islands, marked by a return from the domestic form to the primitive wild one, with a reduction of the lengths and of the cephalic volume, but, total

lengths being equal, with a relative increase of the latter. The cats of Hog Island have on average a cephalic volume significantly higher than the domestic cats, but all the values are included in a zone consistent with the domestic condition. Inversely, on the Kerguelen Islands, the cats have a cephalic volume significantly lower than the domestic cats, all the values being again included in a zone consistent with the domestic condition. The conclusion is drawn that no evolution has taken place in the subantarctic zone and that the cats' skulls, on the Kerguelen Islands as well as in the Crozet archipelago, are similar to those of their introduced ancestors. The evolution observed among the rabbits has been made possible by the great craniometrical differences existing between the wild animals and the domestic ones. On the contrary, among the cats, it is unlikely that the differences can be considerable between the primitive wild form *(Felis ornata)* and the domestic form, this explaining the lack of evolution among the feral populations. (Auth.)

B-19507

Derenne, P., **Notes on the biology of the feral cat in the Kerguelen Islands** [Notes sur la biologie du chat haret de Kerguelen], *Mammalia*, 1976 40(4), p.531-595, In French with English summary. Refs. p.594-595.

From a morphological point of view, the feral cat from Kerguelen has kept, in spite of 20 years of wild life, the principle characteristics which connect it with the domestic species *Felis catus*. This vagabond and solitary animal takes refuge in the subterranean birds' nests and rabbits' burrows. Its activity takes place especially at night; it goes out during the day only when there is no rain. Its diet is almost exclusively carnivorous. The reproduction time extends from September to March. The number of litters a year seldom exceeds one. The breeding of the young cats takes 5 or 6 months. The sexual maturity of the female is acquired at the end of the first year. The rate of proliferation is about 3 kittens a litter. Without any spatial and feeding competition the population has a very high growth rate a year, about 55%. This rate allows one to foresee a total takeover of the main island by these cats. (Auth. mod.)

B-19511

Kuwano, K., Mitamura, T., **On the antarctic krill protein concentrate (KPC). 1. Manufacture of the KPC by isopropyl alcohol method and its chemical composition,** *Japanese Society of Scientific Fisheries. Bulletin*, 1977 43(5), p.559-565, In Japanese with English summary. 23 refs.

Antarctic krill *(Euphausia superba)* protein concentrate (KPC) was manufactured by the isopropyl alcohol (IPA) method from a frozen block of krill. The yield of KPC was 45.2 gram from 500 gram of the frozen block. The nitrogen yield was 51.1% of the frozen block. Analysis of the KPC revealed the following contents and properties: moisture, 7.91%; crude protein, 80.3%; digestibility by pepsin, 97.8%; available lysin, 7.77%; (ratio to crude protein); crude fat, 0.24%; crude ash, 8.46%; fluorine, 150 ppm; chloride (as NaCl), 0.38%; remnants of IPA, 106 ppm; standard plate count, less than 300/g. From the above results, it is suggested that KPC is a high quality protein concentrate. (Auth.)

B-19512

Seki, N., Sakaya, H., Onozawa, T., **Studies on proteases from antarctic krill,** *Japanese Society of Scientific Fisheries. Bulletin*, 1977 43(8), p.955-962, In Japanese with English summary. 12 refs.

Proteases were extracted from antarctic krill, *Euphausia superba*, with borate buffer at pH 8.0. They were partially purified by ammonium sulfate fractionation and gel filtration through Sephadex G-100. Further purification performed with chromatography on DEAE-Sephadex A-50 separated them into two trypsin-like proteases and a protease of unknown specificity. The trypsin-like proteases were characterized by their hydrolysis of TAME as well as the inhibition of the activity in the presence of soy-bean trypsin inhibitor. However, the inhibition of the two tryptic activities by PMSF was less than that in the case of bovine trypsin. All three proteases showed optimal activity at the physiological pH (around 8.0) of krill body fluids. They were stable only in an alkaline medium and digested carp actomyosin. These results suggest that they are responsible for the rapid autolysis of krill body protein which occurs after catching. (Auth.)

B-19514

Clarke, A., **Contamination of Peregrine falcons *(Falco peregrinus)* with fulmar stomach oil,** *Journal of zoology*, 1977 Vol.181, p.11-20, 37 refs.

Since 1971, four peregrine falcons, coated with an oil-like contamination, have been received for analysis at Monks Wood Experimental Station. All were from north or west Scotland. The contamination from one bird was examined and found to be a highly weathered oil of recent biological origin. The biochemical evidence did not indicate an unequivocal source for the oil, but was compatible with the hypothesis, for which there is strong circumstantial evidence, of fouling by stomach oil from a fulmar, *Fulmarus glacialis*. The possible circumstances of the oiling are discussed. It has been speculated that the ejection of stomach oil is used as a defence against predators, and this behavior has been discussed in the literature in relation to a postulated antarctic origin for the fulmarine petrels. On Macquarie I. a Sooty albatross has been observed to eject oil at an approaching cat. Stomach oil production by petrels and albatrosses is unlikely to have evolved solely in response to selection pressure for nest defence. Oiling by fulmars appears to a small, but possibly significant, cause of mortality in coastal peregrines. (Auth. mod.)

B-19518

Gless, E.E., **Life cycle studies of some antarctic mites and description of a new species, *Protereunetes paulinae* sp.n. (Acari: Eupodidae),** Ames, Iowa State University, 1968, 209p., University Microfilms order No.69-4238, Ph.D. thesis. Refs. p.190-192.

Information acquired at Hallett Station, during three austral summer seasons (1965-1966, 1966-1967, 1967-1968) relating to the biology of four species of antarctic mites is presented. *Stereotydeus belli* (Trouessart, 1902) was reared in vitro from tritonymph stage through adulthood, after which one of its offspring was reared through all immature stages to the adult stage. Throughout the second and third seasons mites were kept in dishes containing an artificial medium upon which algae and moss were grown to supply natural food. Four species were reared through various stages of development. Time spent in the various stages and techniques of rearing are presented. The morphological changes that characterize each stage have been determined and are also presented. The new species of mite is described and named. Ecological features of water transfer by windblown humidity and seepage are discussed.

B-19519

Echols, R.J., **Distribution of foraminifera and radiolaria in sediments of the Scotia Sea area, Antarctic Ocean,** Los Angeles, University of Southern California, 1967, 340p., University Microfilms order No.68-7179, Ph.D. thesis. Refs. p.258-277, 315-323.

The distribution of foraminifera and radiolaria in sediments of the Scotia Sea and northern Weddell Sea and their relationship to properties of the water and substrate were studied. Total (live plus dead) foraminiferal assemblages on the northern Scotia Ridge from 330 to about 3400 m are predominantly planktonics and calcareous benthonics. At similar and greater depths on the southern and eastern Scotia Ridge and on the abyssal floors of the Scotia and northern Weddell Seas, total foraminiferal assemblages are predominantly agglutinated

benthonics. A significant factor limiting the distribution of calcareous foraminifera is the rate of solution of calcium carbonate. Low primary productivity suggested by rarity of diatoms in Weddell Sea sediments may be a factor causing the Weddell Sea environment to be marginal for radiolarians. One new genus, *Portatrochammina*, and five new species of Foraminiferida are described.

B-19524

Ohyama, Y., **Population density of free-living mites in the ice-free areas around Showa Station, East Antarctica,** *Antarctic record*, Nov. 1977 No.60, p.47-56, 6 refs.

Population density of free-living mites was surveyed in the ice-free areas of Ongul Islands, Langhovde and Skarvsnes in the vicinity of Lützow-Holm Bay. Sampling of mites was carried out on the sandy ground without macrophytic vegetation quantitatively using a petri dish of 6cm in diameter and 1cm in depth in January and February 1976. Mites were isolated from the sand by the flotation method. The highest density of mite population in each ice-free area was as follows: 57 mites in a petri dishful of sand in East Ongul Island, 75 mites in West Ongul Island and 82 mites in Skarvsnes. A preliminary observation on the relationship between the population density and the habitat moisture was made along the margin of the Yukidori Valley in Langhovde. Sampling was made at 1 m intervals from the waterside The highest density of mite population was observed at a sampling point 2-3 m away from the waterside. (Auth.)

B-19533

Il'ichev, V.D., ed, **Adaptations in penguins** [Adaptatsii pingvinov], Moscow, Nauka, 1977, 176p., In Russian. Numerous refs. passim.

DLC QL696.S473A3

This collection of papers treats various aspects of the morphological and functional adaptations penguins exhibit to marine life and to extreme climatic conditions. The relationships between structure and function of jaw musculature and feathers and ecology are discussed. Production and function of sonar are also investigated. Data are given on ocular anatomy and histology.

B-19534

Dzerzhinskiĭ, F.IA., Korzun, L.P., **Functional morphology of feeding apparatus in penguins** [K funktsional'noĭ morfologii apparata zakhvatyvaniia pishchi u pingvinov], Adaptatsii pingvinov (Adaptations in penguins) edited by V.D. Il'ichev, Moscow, Nauka, 1977, p.5-54, In Russian. Refs. p.53-54.

DLC QL696.S473A3

The anatomy of the cranial and sublingual skeletomuscular system of 7 species (in 3 genera) of penguins is discussed in detail. Intergeneric and interspecific differences and factors determining morphology of the systems are noted. The core of adaptation to underwater feeding on small prey is the ability to overcome the hydrodynamic problem of a stream of water parted by the beak. A complex interrelationship of many features of penguins' mouth parts is described.

B-19535

Shtefan, B., **Pterylography of penguins** [Pterilografiia pingvinov], Adaptatsii pingvinov (Adaptations in penguins) edited by V.D. Il'ichev, Moscow, Nauka, 1977, p.55-101, In Russian. Refs. p.99-101.

DLC QL696.S473A3

Six penguin species were studied by the author and the pertinent literature was searched thoroughly. A comparison of feather structure and distribution on the body was made. Special attention is given to the arrangement of feathers on the wings and their role in forming its posterior edge. Information on contour feather development in ontogenesis and on differences in the course of moult in various species is also offered. The function of feather cover in water-resistance and heat-retention as well as the feasibility of using pterylographic data to clarify phylogenetic questions are discussed.

B-19536

Gavrilov, V.M., **Penguin energetics** [Energetika pingvinov], Adaptatsii pingvinov (Adaptations in penguins) edited by V.D. Il'ichev, Moscow, Nauka, 1977, p.102-110, In Russian. 13 refs.

DLC QL696.S473A3

In three species of penguins, *Aptenodytes patagonica*, *Eudyptes chrysolophus*, and *Eudyptes crestatus*, various indicators of energy metabolism were studied: basal and standard metabolism, boundaries of the thermoneutral zone, caloric equivalent of weight change, body temperature, respiratory coefficient, and energy expended at various ambient temperatures. Water losses during cooling were also calculated. Causes for the broadening of the thermoneutral zone, for high heat conductivity of integument, and for the dependence of energy metabolism on body weight in zoo birds are hypothesized.

B-19537

Markov, V.I., **Sonar in *Eudyptes chrysolophus*** [Podvodnye zvuky zolotokhokhlogo pingvina], Adaptatsii pingvinov (Adaptations in penguins) edited by V.D. Il'ichev, Moscow, Nauka, 1977, p.111-121, In Russian. 2 refs.

DLC QL696.S473A3

The signals produced by penguins underwater or swimming on the surface but with heads submerged are described and analyzed. A number of types of acoustic signals are delineated, which variety points to differences in function.

B-19538

Andreev, F.V., **Ocular morphology of the king penguin** [O stroenii glaza korolevskogo pingvina], Adaptatsii pingvinov (Adaptations in penguins) edited by V.D. Il'ichev, Moscow, Nauka, 1977, p.122-127, In Russian. 9 refs.

DLC QL696.S473A3

The macromorphology and histology of the king penguin's eye are investigated. A number of indications of adaptation to low levels of illumination and to underwater sight are discussed.

B-19539

Korzhuev, P.A., Aliakrinskaia, I.O., Glazova, T.N., **Physiological and biochemical features of the crested penguin** [Fiziologo-biokhimicheskie osobennosti khokhlatogo pingvina], Adaptatsii pingvinov (Adaptations in penguins) edited by V.D. Il'ichev, Moscow, Nauka, 1977, p.128-140, In Russian. 13 refs.

DLC QL696.S473A3

Blood volume, hemoglobin concentration, hematocrit, erythrocyte count, and weight of skin, internal organs, muscles, and skeleton are determined. The results shed light on the extent of the penguins' adaptation to a marine life.

B-19540

Kamenev, V.M., **Ecology of emperor penguins of the Haswell Archipelago, East Antarctica** [Ekologiia imperatorskikh pingvinov raĭona arkhipelaga Khasuell (Vostochnaia Antarktida)], Adaptatsii pingvinov (Adaptations in penguins) edited by V.D. Il'ichev, Moscow, Nauka, 1977, p.141-156, In Russian. 13 refs.

DLC QL696.S473A3

A two-year observational program combined with a literature search allowed the author to study many features of the ecology of Haswell Islands emperor penguins: colony formation, immigration and migration, several types of adaptive behavior, body temperature,

egg-laying, incubation, chick hatching and growth, development of thermoregulation in juveniles, moult, mortality, and colony breakup.

B-19541

Semenov, V.F., **Penguins in Moscow** [Pingviny v Moskve], Adaptatsii pingvinov (Adaptations in penguins) edited by V.D. Il'ichev, Moscow, Nauka, 1977, p.157-164, In Russian.

DLC QL696.S473A3

The author presents original photographs of penguins of several species in the Moscow Zoo. Particular emphasis is placed on the adaptive behavior the birds exhibited during hot weather.

B-19542

Gavrilov, V.M., Delazari, V.D., Il'ichev, V.D., Patliakevich, N.D., **Basic reading list on penguins (1954-1974)** [Osnovnaia literatura po pingvinam (1954-1974)], Adaptatsii pingvinov (Adaptations in penguins) edited by V.D. Il'ichev, Moscow, Nauka, 1977, p.164-173, In Russian. Refs. p.164-173.

DLC QL696.S473A3

This bibliography is briefly introduced and lists books and articles concerned exclusively with penguins. Works in which penguins are treated only in passing or only as one of a number of other birds or animals are not listed. Citations refer to literature in English and several European languages.

B-19547

Lewis Smith, R.I., Gimingham, C.H., **Classification of cryptogamic communities in the maritime Antarctic,** *British Antarctic Survey. Bulletin,* Nov. 1976 No.43, p.25-47, 13 refs.

As a means of assessing the acceptability of an established subjectively generated classification of the bryophyte- and lichen-dominated communities of Signy Island, South Orkney Islands, in the maritime Antarctic, comparisons have been made with groupings derived from an objective approach using statistical procedures. Three sites were selected in which most of the principal terricolous cryptogamic community types of the island were represented. Percentage cover of all species was recorded in quadrats of three sizes (100,200 and 400 sq cm) at a total of 240 sampling points. Qualitative notes were made at each sampling point describing the substratum and water regime. The data were then subjected to various statistical analyses. It is concluded that the results of the various analyses strongly support the validity of the community groupings (associations, sociations) proposed in the subjective classification. (Auth.)

B-19550

Barrow, C.J., **Palynological studies in South Georgia: 1. Pollen and spore morphology of the native vascular species,** *British Antarctic Survey. Bulletin,* Nov. 1976 No.43, p.63-75, 20 refs.

Illustrations and descriptions are given of pollen and spores from the 25 living taxa which comprise the present-day native vascular flora of South Georgia. The pollen and spores of 12 of these taxa are described for the first time. The material was treated by standard palynological techniques so that the appearance of the pollen and spores resembles as closely as possible that of fossil grains isolated from peat. (Auth.)

B-19552

Collins, N.J., **Development of moss-peat banks in relation to changing climate and ice cover on Signy Island in the maritime Antarctic,** *British Antarctic Survey. Bulletin,* Nov. 1976 No.43, p.85-102, Refs. p.101-102.

Following a consideration of general climatic changes and their consequences during the Pleistocene, evidence is presented of short-term changes in climate on Signy Island, South Orkney Islands, which have resulted in a decrease of persistent snow and ice cover at the present time. A sequence of vegetation development is suggested that has resulted in part from these changes, involving both the colonization moss carpets by the more slowly decomposing moss turves which leads to the initiation of new moss-peat banks and also to the re-colonization of moss-peat banks that were formerly buried and have been re-exposed by more extensive annual snow melt. Comparisons are made with the development and structure of bryophyte-dominated vegetation in northern Sweden, north-east Greenland and the Canadian Arctic. (Auth.)

B-19553

Moore, D.M., Doggett, M.C., **Pseudo-vivipary in Fuegian and Falkland Islands grasses,** *British Antarctic Survey. Bulletin,* Nov. 1976 No.43, p.103-110, 13 refs.

Pseudo-vivipary is present in natural populations of four grass species occurring at high latitudes in southern South America. In *Festuca subantarctica* Parodi and *Poa alopecurus* (Gaudich.) Kunth ssp. *fuegiana* (Hook. f.) Moore and Doggett, comb. nov. the axis of the spikelet undergoes metamorphosis into the leafy shoot of the propagule, while in *Poa robusta* Steudel and *Agrostis canina* L. var. *falklandica* (Hook. f.) Hack. this is derived by elongation of the lemma. In the first three species pseudo-vivipary is a constant feature of the reproductive system, but it appears to be rare in *Agrostis canina.* Completely or partly pseudo-viviparous plants are largely confined to the higher rainfall areas of south and west Fuego-Patagonia and at higher elevations there and in the Falkland Islands. *Poa fuegiana* (Hook. f.) Hack. ex Dusén and *P. pogonantha* Franchet are shown to represent pseudo-viviparous facies of the widespread austral species *Poa alopecurus,* whilst it is suggested that pseudo-viviparous populations referred to *Festuca subantarctica* are conspecific with the central and southern Chilean species *F. monticola* Philel. Vegetative proliferation of spikelets has been shown to be induced by abnormal environmental conditions in normally sexual inflorescences of *Agrostis flavidula* Steudel. (Auth.)

B-19554

Clarke, A., **Some observations on krill *(Euphausia superba* Dana) maintained alive in the laboratory,** *British Antarctic Survey. Bulletin,* Nov. 1976 No.43, p.111-118, Refs. p.118.

Specimens from three swarms of adolescent krill were maintained in a laboratory for several months. Moulting occurred at 13-14 day intervals during summer, becoming less frequent towards winter when moulting ceased altogether. Cast moults represented a loss of 10 per cent of the animal's total mineral salts, but, apart from chitin, losses of organic material were small. (Auth.)

B-19555

Jennings, P.G., **Tardigrada of Signy Island, South Orkney Islands, with a note on the Rotifera,** *British Antarctic Survey. Bulletin,* Dec. 1976 No.44, p.1-25, Refs. p.24-25.

Sixteen species of Tardigrada are recorded from 43 habitats on Signy Island. The sites sampled ranged from lichens and mosses to fresh-water habitats. Eleven new records have been added to the South Orkney Islands' fauna, and one genus, *Oreella,* to the fauna of the Antarctic. Population densities are reported for each species or species group from eight sites together with estimates of biomass. Densities were higher in sites affected by vertebrates. Four species accounted for 95.1% of the total tardigrade biomass. These were *Hypsibius (Hypsibius) dujardini* Doy., *Hypsibius (Diphascon) pinguis* Marcus, *Hypsibius (Diphascon) alpinus* J. Murr. and *Macrobiotus furciger* J. Murr. (Auth.)

B-19560
Kightley, S.P.J., Lewis Smith, R.I., **Influence of reindeer on the vegetation of South Georgia: 1. Long-term effects of unrestricted grazing and the establishment of exclosure experiments in various plant communities,** *British Antarctic Survey. Bulletin.* Dec. 1976 No.44, p.57-76, 22 refs.

A summary is given of the history of reindeer on South Georgia and the rapid increase in population numbers has been traced from the few published reports on the animals. The influence of the deer on individual plant species and on the predominant ecosystems in the three areas of the island occupied by reindeer is discussed. In order to monitor the degree and rate of degradation or change in the principal plant communities which are being grazed and trampled, a number of exclusion sites were established in 1973-74 at five widely separated localities. Large fenced exclosures and small cages were erected on communities being modified by the deer. Each exclusion site had an unfenced control site nearby which is accessible to the animals. Permanent quadrats in each site were analyzed quantitatively for species composition and percentage cover afforded by each, photographs were taken of each quadrat, and soils from each site have been chemically analyzed. Examples are given of rapid regeneration by certain species during the first 4 months of the program. (Auth.)

B-19561
Jennings, P.G., **Tardigrada from the Antarctic Peninsula and Scotia Ridge region,** *British Antarctic Survey. Bulletin,* Dec. 1976 No.44, p.77-95, 20 refs.

A survey of 70 sites in the Antarctic Peninsula and Scotia Ridge region yielded 11 species or species-groups of Tardigrada. Samples were collected from sites on South Georgia, the South Sandwich Islands, the South Orkney Islands, the South Shetland Islands and southward along the western coastal fringe of the Antarctic Peninsula to lat. 70 deg 48'S. The distribution and abundance of Tardigrada in these areas are discussed. Tardigrade population densities were highest on King George Island, South Shetland Islands. The distribution and density of the terrestrial Rotifera are also briefly mentioned. A survey of literature relating to Antarctic Tardigrada reveals a list of 23 species. (Auth.)

B-19562
Bell, B.G., **Notes on Antarctic bryophytes: 6. The genus *Dicranoweisia* on Signy Island, South Orkney Islands,** *British Antarctic Survey. Bulletin,* Dec. 1976 No.44, p.97-100, 22 refs.

The identity of two species of *Dicranoweisia, D. grimmiaceae* (C. Muell.) Broth. and *D. antarctica* (C. Muell.) Kindb. on Signy Island, South Orkney Islands, is established but that of a third, *D.* cf. *immersa,* remains uncertain. The history of their nomenclature is discussed and a key to separate the species is provided, as are details of all specimens examined. (Auth.)

B-19563
Ralph, R., Maxwell, J.G.H., Everson, I., Hall, J., **Record of *Mytilus edulis* L. from South Georgia,** *British Antarctic Survey. Bulletin.* Dec. 1976 No.44, p.101-102, 8 refs.

The finding of a live *Mytilus edulis* at South Georgia is described; this is claimed to be the first record of this species from the Antarctic. (Auth.)

B-19564
Lindsay, D.C., **Abnormal growth form of *Usnea antarctica* Du Rietz,** *British Antarctic Survey. Bulletin.* Dec. 1976 No.44, p.102-103, 6 refs.

A specimen of *Usnea antarctica* Du Rietz 67 cm. in length was found growing on a boulder on Nelson Island, South Shetland Islands, in January 1966. It was noticeable from a distance because of its long pendant thallus compared to the shrubby erect habit of the surrounding population.. Its mode of branching was also atypical. Soralia were sparse but otherwise the plant was normal.

B-19566
Lindsay, D.C., **South Georgian microlichens: 2. A new species of *Microglaena* Körb.,** *British Antarctic Survey. Bulletin,* Dec. 1976 No.44, p.105-106, 3 refs.

Microglaena austrogeorgica D.C. Lindsay is described as a new species. A key to the species of the genus so far known from the Antarctic and Subantarctic is provided. (Auth.)

B-19573
Bernasconi, I., D'Agostino, M.M., **New species of antarctic ophiuroid: *Ophiurolepis granulifera* sp. nov. (Ophiuroidea, Ophiuridae)** [Nueva especie de ofiuroideo antártico, *Ophiurolepis granulifera* sp. nov. (Ophiuroidea, Ophiuridae)], *Physis.* Nov. 1977 32(85), Sect. A, p.263-266, In Spanish with English summary.

In the Ophiuroidea collection from the Antarctic Peninsula kept at the Muséo Argentino de Ciencias Naturales, in Buenos Aires, there are two specimens of the genus *Ophiurolepis* which differ from the other species mentioned. A description is given. (Auth.)

B-19574
Burukovskiĭ, R.N., **New species of shrimp, *Pasiphaea grandicula,* and a short outline of species of the genus** [Novyĭ vid krevetok *Pasiphaea grandicula* i kratkaia svodka vidov roda], *Biologiia moria.* 1976 No.1, p.17-28, In Russian with English summary. Refs. p.27-28.

Among specimens taken from the Atlantic sector of the Antarctic ocean were several of a new shrimp *Pasiphaea grandicula* sp. nov. (Pasiphaeidae, Decapoda). It is described and a key is given to determine the rest of the species of *Pasiphaea.* Charts showing areal and bathymetric distribution of the new species are also included. (Auth. mod.)

B-19594
Dailey, M.D., **Disease as a cause of natural mortality in some antarctic whale stocks and parasites as potential biological tags,** *Antarctic journal of the United States.* Oct. 1977 12(4), p.6, 3 refs.

Examinations of the external surface, organs, blood and fecal samples were carried out on a total of 239 whales aboard two Japanese whaling factory ships. The total was comprised of 113 minke, 93 sei, and 33 sperm whales. Of the 239 animals examined 145 (60%) were parasitized with incidence levels reaching 100% in the sei and sperm. Minimal infection levels were found in the minke (17%). Helminths of the acanthocephalan, cestode, and nematode groups were common. The material and data collected are under study.

B-19595
Zapol, W.M., **Awake breath-hold diving in the Weddell Seal,** *Antarctic journal of the United States.* Oct. 1977 12(4), p.7, 1 ref.

Physiological, metabolic, and endocrine studies of gravid and non-pregnant Weddell seals at the Ecklund Biological Center are described. Awake submerged and restrained breath-hold dives with physiological monitoring lasting up to 50 minutes were repeatedly carried out. Accurate information was obtained on the regional distribution of systemic blood flow to the brain, heart, and other tissues and organs. Near-term pregnancy was determined by manual vaginal palpation and fetal studies were made. Biochemical investiga-

tions indicated that the Weddell seal's lung takes up lactate from venous blood during diving and releases glucose into the central arterial circulation for metabolism by the brain.

B-19596

Kooyman, G.L., Billups, J.O., Davis, R.W., Castellini, M.A., **Diving behavior of fur seals, *Arctocephalus gazella,* and king penguins, *Aptenodytes patagonica,* near South Georgia Island,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.8, 1 ref.

Preliminary study of the diving behavior of 5 fur seal cows, recaptured within one week after attaching depth-time recorders and locator transmitters to them, indicates that the diving characteristics of this species are different from those of the northern and the Afro-Australian fur seals studied previously. The dives of the fur seal cows were shallow and all of short duration. Studies of the diving behavior of king penguins are still in progress. Tentatively, it appears that king penguins may dive deeply.

B-19597

DeMaster, D., Kuechle, V., Thimas, J., Rongstad, O., **Colonial behavior of antarctic marine mammals in eastern McMurdo Sound,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.8-9.

Investigations of Weddell seals in the McMurdo Sound area from Oct. 7 through Dec. 13, 1976 included: estimating the seal population; tagging animals throughout the study area for more precise analyses of this year's population; taking vaginal smears for estrus studies in parous and nonparous females; observing haulout patterns of parous females, and recording underwater vocalizations. To investigate the relationship between haulout and density an artificial colony of females and pups and a control group were similarly outfitted with radios and monitored via scanning receiver.

B-19598

Siniff, D.B., Stirling, I., Bengtson, J.L., Reichle, R.A., **Biota of the antarctic pack ice: R/V *Hero* cruise 76-6,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.10-11, 6 refs.

Research on crabeater seals during their breeding season was initiated in 1975 to delineate: 1) social structure and reproductive behavior, 2) daily activity patterns and local movements, 3) interactions between seals, ice, and other environmental conditions, and 4) population characteristics such as sex and age structure, distributional patterns, and density. In addition to studies of crabeater seals, miscellaneous observations were recorded on leopard, elephant, and Weddell seals. Significant concentrations of crabeater seals were discovered in some fast ice bays of the Antarctic Peninsula and the South Shetland Is. The largest concentration was located in Martel Inlet of Admiralty Bay, King George I. where observers saw approx 700 seals on the ice and estimated 1,500 in the vicinity. Additional information was obtained on the different types of scars commonly seen on crabeater seals.

B-19599

Webb, P.N., Leckie, R.M., **"Complete" seal carcass at Lake Miers, Miers Valley,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.11-12, 8 refs.

A fresh complete crabeater seal carcass found on the northeast shoreline at Lake Miers in Dec. 1976 is described. The condition of the seal suggests that it may have recently journeyed to the site. A slightly less perfect complete carcass was located along the northeast side of Miers Glacier and a fully feathered but flesh-picked Adélie penguin skeleton, on the bank of the Miers Valley stream.

B-19600

Müller-Schwarze, D., Trivelpiece, W., Volkman, N.J., **Behavioral and ecological adaptations in pygoscelid penguins,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.12-13, 1 ref.

Breeding success, predator-prey dynamics, interspecific interactions, and food utilization was analyzed for the period Oct. 14 to Dec. 3, 1976 in the three pygoscelid penguin species, the Adélie, gentoo, and chinstrap. Adélie penguins laid an average of 1.83 eggs per pair and had experienced a 42% egg loss as of Nov. 30. Gentoo pairs laid an average of 1.92 eggs with a 16% loss by Nov. 30. Chinstraps first had eggs on Nov. 15 and 78% of the breeding pairs had completed the normal two-egg clutch by Nov. 30. All three species of penguins suffered higher egg losses in the areas of mixed species (brown and south-polar skuas, sheathbills, and black-backed gulls) predator pressure than in areas of skua only predation. The most significant finding was the discovery of mixed colonies of Adélie and chinstrap penguins. The latter succeeded in taking over approx 300 nest sites from incubating Adélies. Krill is the major item in the diet of all three penguins.

B-19601

Todd, F.S., **Permanent breeding colony of high antarctic penguins for research and education,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.13-14, 1 ref.

During the 1976-77 austral summer 40 nomadic emperor penguins from the ice edge and 50 pairs of Adëlies from Cape Crozier were airlifted to San Diego on Nov. 29 without incident. The penguins are maintained at -7C in a 10 by 16 m refrigerated enclosure with a salt water pool, 3 automatic ice makers, lighting, observation windows, and nesting rocks. Behavioral and hormone studies are in progress. Emperor penguin census work conducted at the Cape Crozier and Beaufort I. rookeries is briefly described.

B-19602

Kooyman, G.L., Castellini, M.A., Davis, R.W., **Blood characteristics related to oxygen carrying capacity in birds from South Georgia Island,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.14.

The oxygen carrying capacity of blood was studied in blood samples, obtained from six species of petrel, one diving petrel, one albatross, two penguin species and the flightless steamer duck. Albatross blood had the lowest oxygen carrying capacity, followed by the petrels, and the highest oxygen carrying capacities were those of the diving birds. Of particular interest was the small South Georgia diving petrel whose blood oxygen carrying capacity matched that of the adult king penguins.

B-19603

Jehl, J.R., Jr., **Ornithological research between Argentina and South Georgia,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.14-15.

Detailed seabird censuses were made between Argentina and South Georgia aboard *Hero* during a cruise from Mar. 21-Apr. 21, 1977. In addition, water temperatures and plankton trawls were taken. At South Georgia investigations were made of the feeding ranges of nesting seabirds, the incidence of oiling among birds, and the behavior of various species. Important findings were several records of Kerguelen petrel, one Adëlie penguin, one emperor penguin, and the first records of cattle egrets south of the Antarctic Convergence. A census of wandering albatrosses nesting at the Bay of Isles was conducted and sightings of marine mammals were documented.

B-19604
Ainley, D.G., Boekelheide, R.J., **Seabirds in antarctic marine ecosystems,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.15-16, 7 refs.

The purpose of this work was to assess the biomass of birds of the antarctic seas, compare their biomass to that of mammals, and describe the ecological structure of avian communities. A marked increase occurs in bird biomass passing from subtropic into subpolar waters, with the densest bird concentrations at oceanographic fronts or in areas where water temperatures change rapidly within short distances. A cursory view of the Ross Sea data indicates that birds outnumber seals and cetaceans. Based on the data it appears that the three groups are about equal in biomass. Most of the bird biomass was contributed by penguins. The stations and vertebrates observed during each leg of the cruise are tabulated.

B-19605
Parmelee, D., Fraser, W., Glass, B., Neilson, D., **Ecological and behavioral adaptations to antarctic environments,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.17.

This research has been concerned with the study of the ecology and behavior of the south polar skua, brown skua, and southern black-backed gull at Palmer Station; observations of the skua population on Bird I., hybridizing skuas at Joubin Is., and four small colonies of breeding fur seals at the Gossler I., the first reported for the region; winter observations of giant fulmars, American sheathbills, gulls and antarctic terns at Palmer (skuas are absent in winter); and radar tracking of various kinds of migrating flocks of birds at sea in the Palmer area. A major effort to band all the skua chicks within the Palmer Station study area was accomplished, and a radio-telemetry feasibility study conducted on the south polar skua culminated in the first successful radio-tracking of this species in the Antarctic.

B-19606
DeVries, A.L., **Role of glycoprotein and peptide antifreezes in the survival of polar fishes,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.17-18, 10 refs.

A mechanism of antifreeze activity in antarctic fish is proposed that involves the adsorption of the glycoproteins and peptides to the surface of ice crystals which results in inhibition of crystal growth. In this mechanism the glycoproteins and peptides adsorb randomly on the crystal surfaces, and as a result crystal growth can take place only between the adsorbed molecules. The result of such a constraint on the pattern of ice growth is that the advancing ice front is divided into many small advancing fronts each of which is highly curved. Ice growth will not occur at these highly curved fronts unless the temperature is significantly lowered. This can be stated in another way, which is that the freezing point is lowered. The adsorption-inhibition model not only appears to explain the unusual freezing point depression but is also consistent with the difference that is observed to occur between the freezing and melting points of solutions of the antifreeze. The structural features of the glycoprotein that allow it to recognize ice have been studied, and it appears that a specific spatial arrangement of the saccharide side chains is necessary. Most likely the hydroxyl groups of the saccharides hydrogen bond to the oxygens in the ice lattice.

B-19607
McCleave, J.D., Dearborn, J.H., DeWitt, H.H., **Ecology of benthic fishes and echinoderms along the Scotia Arc and the Antarctic Peninsula,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.19-20, 2 refs.

This paper describes studies of the taxonomy, zoogeography, population structure, and feeding biology of benthic fishes, and the zoogeography, feeding biology, and chemical composition of invertebrates. Most of the material was obtained during cruises along the Scotia Arc and in the vicinity of Anvers I. south to Marguerite Bay. The tasks include a revision of the ice-fish genus *Chionodraco*, identification, descriptions, and faunal analysis of benthic fishes, a review of the snail family Liparidae, age and growth studies, analyses of the stomach contents of benthic communities, and investigations of digestive physiology and metabolism. Geographic and bathymetric distributions of ecologically important echinoderms are being determined. Of particular interest are the interactions of demersal fish and echinoderm prey and the predator-prey roles of antarctic asteroids and ophiuroids.

B-19608
Dayton, P.K., Oliver, J.S., **Processes organizing contrasting benthic communities of McMurdo Sound,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.20-21, 6 refs.

The winter program has been concerned with the study of life history patterns of infaunal animals, including details of reproductive biology, recruitment success, and survivorship of different age groups. Preliminary work shows that seasonal reproductive cycles common to arctic animals exist at McMurdo Sound, with predation on juvenile life stages being a major factor in the organization of the soft-bottom community at McMurdo Sound. Almost all the infaunal species show adaptations to reduce mortality to settling larvae. Deep-sea barnacles collected in Jan. 1976 (Oliver et al, B-17132) and transferred to a shallow water area, reproduced in 1977 and the young have settled on the sides of the adults.

B-19609
Barsdate, R.J., Alexander, V., **Effects of ice facies on small scale oceanic phenomena: R/V *Hero* Cruise 77-1,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.21-23, 9 refs.

The effects of ice on the local near-shore system in the vicinity of Palmer Station have been studied, concentrating on low trophic level biology and on aspects of seawater chemistry. Chlorophyll values ranged from undetectable to 9 mg/cu m with the highest values in the bay at Deception I. Primary productivity showed a similar variation, and light vs photosynthesis experiments suggested two distinct populations with differing responses, possibly related to nutrient levels. It is suggested that ammonia is a major source of nitrogen for the phytoplankton populations and that it is sensitive to changes in productivity and influences algal light response. Data from the run-off and precipitation study are tabulated, and differences between arctic and antarctic ice-algal communities are briefly discussed.

B-19610
Howell, L.W., Jr., Krutchkoff, R.G., Parker, B.C., **Ecosystem studies and mathematical model for Lake Bonney, Taylor Valley, southern Victoria Land,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.23-24.

Measurements of the Lake Bonney ecosystem pursuant to a mathematical model included dissolved O2, pH, sulfates, NH4-N, NO3-N, NO2-N, primary productivity, algal counts, temperature, alkalinity, and PO4-P. Increasing emphasis was given to assessment of glacial meltwater input to the lake, inorganic nitrogen and orthophosphorus composition of the meltwater and the ice-cemented permafrost, and a new investigation of carbon-14 organic substrate uptake by the plankton microorganisms. These data will be reported following detailed analysis and interpretation. In addition, the growth of Lake Bonney, which has more than doubled in volume since its discovery in 1903, is being investigated. The mathematical model, believed to be the first such model for an arheic, meromictic lake, is described, and examples of the computer output are given.

B-19611

Parker, B.C., Ford, A.B., Allnutt, T., Bishop, B., Wendt, S., **Baseline microbiological data for soils of the Dufek Massif,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.24-26, 1 ref.

Preliminary assessment is made of an earlier study by Cameron, R.E. et al (1974; 29-1929 or E-14315) using 23 soil samples from the Dufek Massif. Sample preparation is described. Tripticase Soy-Soil Extract Agar (TSSA) and Peptone-Yeast Extract-Soil Extract Agar (PYSA) were used as culture media. Data on the soils sampled and aerobic bacteria colony counts following 10 days' incubation are tabulated. Four representative soil sample sites are shown. The two basic residual soils are silty sand or gruss. Appreciably higher numbers of colonies developed on the simple PYSA medium than on TSSA. Differences in aerobic counts per gram of soil obtained in this study and the earlier study suggest that TSSA may not be a good medium for microorganisms native to soils of the Pensacola Mts. and the Dufek Massif.

B-19612

Friedmann, E.I., **Microorganisms in antarctic desert rocks from dry valleys and Dufek Massif,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.26-29, 5 refs.

Endolithic microorganisms that form visible growth patterns inside rocks were collected from over 50 localities in the dry valleys and an additional sample (in anorthosite rock) in the Dufek Massif. In granite, marble, silicified sandstone, and anorthosite the growth is chasmoendolithic (the organisms colonize existing fissures in the rock), while in porous sandstone the dominant form is cryptoendolithic (growing in the internal airspace system of the porous rock and forming a more or less continuous horizontal layer under the surface). The endolithic microorganisms collected and their preferences in rock substrates are described and illustrated. A varied flora consisting of lichens, fungus filaments, unicellular eucaryotic algae, and unicellular cyanobacteria was found in friable Beacon sandstone. Microclimate measurements are given.

B-19613

Holm-Hansen, O., Azam, F., Carlucci, A.F., Hodson, R.E., Karl, D.M., **Microbial distribution and activity in and around McMurdo Sound,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.29-32, 6 refs.

Water samples from McMurdo Sound were analyzed for chemical and microbiological parameters to obtain data relating to the distribution, abundance, and metabolic activities of microbial populations. The total microbial biomass as determined by adenosine triphosphate (ATP) analyses indicates a pronounced difference between the east and west sides of McMurdo Sound. The concentration of particulate ATP in surface waters at eastern sites was significantly higher than that at western sites. Marked differences also occur in heterotrophic activity between the two sides of the Sound as demonstrated by H3-labelled ATP and H3-labelled glucose uptake data. Temperature does not appear to be a limiting factor on the growth of heterotrophic microbial populations in antarctic waters. Comparison of data from two sample sites indicates a very high phytoplankton crop at the Aussie hole (east side) as compared to that in the surface waters at Heard I. (west side), as well as dramatic differences in phytoplankton species composition.

B-19614

Lipps, J.H., DeLaca, T.E., **Ross Ice Shelf Project—benthic biology, 1976-1977,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.32-33, 4 refs.

Relative to a study of the benthic biota, if any, under the Ross Ice Shelf, water samples were collected in the McMurdo Station area for later comparison to samples from the RISP drill site. Samples from the New Harbor area on the western side of McMurdo Sound, described by Dayton and Oliver (1977; B-18490) as being oligotrophic in comparison to the eastern side, demonstrated 10% of the bacterial numbers found on the eastern side of the Sound. Despite the apparent paucity of nutrients, large populations of active filterfeeders exist. Two large agglutinated arborescent foraminifera, as yet unnamed, were found in the New Harbor area.

B-19615

Green, K.A., **Ecosystem modeling for the southern ocean,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.34-35, 8 refs.

A 12-compartment model for the Ross Sea, incorporating ice algae, ice community, invertebrates, phytoplankton, zooplankton, fish, squid, penguins, seals, whales, detritus and decomposers, dissolved organic carbon, and inorganic nutrients, with light regime and ice cover as the physical driving forces, has been expanded to 24 compartments. The zooplankton compartment is split into krill and other zooplankton; seals are split into six species; whales are partitioned into five baleen and two toothed whale compartments. Other compartments are retained. Respiration, migration, and losses to man through harvesting are incorporated. Most flow formulations remain linear terms, with time-varying transfer coefficients. Model results have pointed out an unexpected incompatibility between krill population estimates and life span data.

B-19616

El-Sayed, S.Z., Taguchi, S., **Phytoplankton studies in the water column and in the pack ice of the Weddell Sea,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.35-37, 2 refs.

Efforts to gain new information regarding the productivity of the Weddell Sea focused on studies of the ecology and metabolism of ice algae in the pack ice and their contribution to organic production of antarctic waters; assessment of the contribution of nannoplankton, or organisms less than 20 microns to primary production; and estimates of the standing crop of phytoplankton, extracellular metabolites, adenosine triphosphate, etc. Feeding experiments utilizing several species of euphausiids and copepods were made. *In vivo* fluorescence and salinity were determined on ice core samples and special experiments were conducted to determine the effect of variation of salinity on ice algae. Chlorophyll a, *in vivo* fluorescence, phaeopigments, and nutrient concentrations were monitored at 18 stations. Maximum values of fluorescence were found at the southern stations circa 78S.

B-19617

Finger, K.L., **Foraminiferal species obtained by R/V *Hero* from Deception Island, 1971-1976,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.37-39, 6 refs.

More than 250 bottom samples from Deception I. were analyzed for foraminiferal content during five successive austral summers. Forty-four genera and 88 species, comprising the total fauna compiled from the 5-yr collection, are listed. The low-diversity fauna of Port Foster and its surroundings are noted.

B-19618

Landrum, B.J., **Studies in polar biology,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.39-40, 1 ref.

The research of the Smithsonian Oceanographic Sorting Center (SOSC) and its cooperative systematic studies program are reviewed. A figure illustrates the scheme for collecting, processing, and studying polar collections. Since 1963 SOSC has shipped over 7 million specimens to scientists in about 50 institutions throughout the world.

B-19738
Bellisio, N.B., Tomo, A.P., **New distribution of *Champsocephalus gunnari* Lönnberg (Pisces, Chaenichthyidae)** [Nueva distribución para *Champsocephalus gunnari* Lönnberg (Pisces, Chaenichthyidae)], *Buenos Aires. Museo Argentino de Ciencias Naturales Bernardino Rivadavia. Instituto Nacional de Investigación de las Ciencias Naturales. Revista. Ciencias zoológicas*, 1970 10(1-18), p.105-111, In Spanish. 8 refs.

The first adult specimen of *Champsocephalus gunnari* (265 mm) was taken along the coast of the Antarctic Peninsula by the United States vessel *Hero*. Combined with the finding of a juvenile of the same species near Deception Island, this specimen allows us to assume the fish native to the western part of the continent, whereas it had formerly been known only in the Kerguelen and South Georgia Islands. (Auth.)

B-19745
Blond, G., **Our friends in the sea and on the coasts** [Nos amis de la mer et des rivages], Paris, Solar, 1973, 158p., In French.

DLC QL713.2.B56

This copiously illustrated book for the general reader is divided into chapters on penguins, whales, seals, and dolphins. For each group of animals, it describes habitat, behavior and feeding habits, reproductive cycle, and effects of man's activities.

B-19746
Mejia, R.H., Pinto, J.E.B., **Extracellular water distribution and circulatory function of the penguin,** *Acta physiologica latinoamericana*, 1970 20(4), p.396-401, 19 refs.

During the antarctic summer 1967-1968, several aspects of the circulatory function and water distribution were studied in gentoo penguins. Utilizing the isotope dilution technique, red cell mass, plasma volume, extracellular fluid volume and cardiac output were measured. In addition, arterial blood pressure and EKG were recorded and hematocrit ratio was determined. Finally the effects of epinephrine, norepinephrine and alpha and beta blocking agents on arterial blood pressure were studied. As compared with other birds or mammals, these diving birds have a high red cell mass (53 ml/kg), a high blood volume (114 ml/kg), and were not able to develop hypotension after the i.v. injection of epinephrine, when an alpha blocking agent was previously administered. The relation of these findings to the adaptation to cold environment of these non-flying birds is discussed. (Auth.)

B-19747
Meeth, P., Meeth, K., **Northern records of the Antarctic Petrel *Thalassoica antarctica* in the South Pacific,** *Ardea*, Oct. 1977 65(1/2), p.89, 2 refs.

This is a record of two vagrant antarctic petrels at approx 48 deg S in the Pacific Ocean. This is the most northern siting of the bird in any ocean and only the second record for the Pacific Ocean. Vagrant records north of 55 deg are usually confined to the Indian Ocean and the Atlantic.

B-19748
Weigmann, G., Schulte, G., **Evolution of the family Ameronothridae (Acari:Oribatei) 1. Morphological aspects,** *Acarologia*, Sep. 1977 19(1), p.161-166, 17 refs.

The morphological characters of the genera until now assigned to the families Ameronothridae, Podacaridae and Aquanothridae were critically surveyed. Groups of genera did not differ by decided gaps of morphological characters, and so these groups should not be regarded as monophyletic groups of the rank of families. The unification of the genera *Ameronothrus, Aquanothrus, Podacarus, Alaskozetes, Halozetes, Antarcticola* and *Pseudantarcticola* in the single family Ameronothridae is proposed. A revision of *Alaskozetes* would probably result in its synonymy with *Podacarus*. *Antarcticola* spp., *Alaskozetes antarcticus antarcticus, Podacarus* spp. *Halozetes* spp. and *Halozetes* spp. are subantarctic or antarctic terrestrial, transition, or intertidal animals. (Auth. mod.)

B-19749
Schulte, G., Weigmann, G., **Evolution of the family Ameronothridae (Acari: Oribatei) 2. Ecological aspects,** *Acarologia*, Sep. 1977 19(1), p.167-173, 19 refs.

The monotypical ameronothrid genera *Alaskozetes, Aquanothrus, Podacarus, Pseudantarticola* and *Antarcticola* (2 species) are restricted to wet and cold, arctic, antarctic and alpine (mountainous) terrestrial habitats. The polytypical ameronothrid genera *Halozetes* and *Ameronothrus* comprise transitional species living in terrestrial environments and in the marine littoral. Within several species of these general ecological specializations have been established regarding adaptations to littoral substrates, submersion and salinity. A hypothesis of the evolution of the Ameronothridae was suggested. From scattered relict terrestrial biotopes, ameronothrids invaded aquatic habitats including mountainous freshwaters and polar coastlines. Terrestrial species were restricted and therefore unable to leave the relict habitats. The coastal species spread themselves throughout various littoral zones along continental shores. (Auth.)

B-19750
Jones, E., **Ecology of the feral cat, *Felis catus* (L.), (Carnivora: Felidae) on Macquarie Island,** *Australian wildlife research*, Oct. 1977 4(3), p.249-262, Refs. p.261-262.

A field study of the ecology of feral cats, with particular emphasis on diet, was conducted at Macquarie I. from December 1973 to March 1975. Diet was determined by the examination of scats and gut contents. Rabbit remains were found in 82% of scats and 71% of gut samples: rabbits weighing less than 600 g (about 10 weeks old) accounted for 81% of all rabbits eaten. Antarctic prion and white-headed petrel collectively occurred in 45% of the scats and 49% of the gut samples and formed the second major component of the cats' diet. Rats, mice and wekas were eaten in small numbers. Cats also scavenged on dead elephant seals and penguins on the beaches, especially during winter. Cats were found over c. 65% of the island and were common in all habitats except for the plateau feldmark, where they were either sparse or absent. The adult population was estimated at between 250 and 500. Availability of food in winter appeared to be an important factor limiting population. (Auth.)

B-19751
Siniff, D.B., DeMaster, D.P., Hofman, R.J., **Analysis of the dynamics of a Weddell seal population,** *Ecological monographs*, Summer 1977 47(3), p.319-335, Refs. p.334-335.

A breeding population of the Weddell seal was studied annually during the 2 1/2-mo pupping and breeding season in McMurdo Sound, Antarctica, from 1969 through 1974. Components of the population were estimated by direct counts of adult females with pups, by capture-recapture studies of nonparous females and adult males, and by aerial counting. Total population size was estimated as being on the order of 2,500-3,000 seals. Reproductive rates (measured in terms of successful pupping) were approx. 0.5 pups/female for the entire breeding colony, and approx. 0.7 pups/female for a subset of tagged females observed for 4 yr in sequence. Age-specific reproductive data were also obtained, and it appears that full reproductive activity of females is achieved at age 7. The annual survival rate for adult females is in the range of 0.80 to 0.85, as determined (by several methods) from tagging data. Survival rates for adult males are lower

(perhaps 0.50), but are not as well established. Little information was obtained on the subadult class (1 to 3 yr of age). Underwater territories of adult males on one breeding colony were studied by acoustic tagging and found to be steadily patrolled by dominant males. Two experimental colonies having different densities of females with pups demonstrated increased interactions at higher densities, but lower weight losses on the part of the females (presumably due to isolated location of the colonies). We infer from the available data that the McMurdo Sound population is somehow regulated by a physiological or social connection between the number of adult females at the pupping colonies and subsequent year's pup population. (Auth.)

B-19777

Somme, L., **Observations on the snow petrel *(Pagodroma nivea)* in Vestfjella, Dronning Maud Land,** *Oslo. Norsk polarinstitutt. Arbok*, 1976 (Publ. 1977), p.285-292, 8 refs.

Colonies of the snow petrel *(Pagodroma nivea)* were observed at several localities in Vestfjella, Dronning Maud Land, in January and February 1977. The colonies varied in size from only a few to more than one thousand occupied nests. The nests were situated under large stones on mountain slopes, mostly facing north and northwest. The chicks were hatched by the middle of January, and the parents remained on the nests until between 20 and 25 January. Some observations were made on flying habits and feeding. Beside snow petrel, the South polar skua *(Catharacta maccormicki)* and a few pairs of the Antarctic petrel *(Thalassoica antarctica)* were breeding in Vestfjella. Some specimens of Wilson's storm petrel *(Oceanites oceanicus)* were observed. (Auth.)

B-19780

Hamoir, G., **Protein differentiation of the white, yellow and cardiac muscles of an antarctic hemoglobin-free fish, *Champsocephalus gunnari*** [Différenciation protéinique des muscles striés blancs, jaunes et cardiaque d'un poisson antarctique exempt d'hémoglobine, *Champsocephalus gunnari*], *Académie des sciences. Paris. Comptes rendus hebdomadaires des séances. Sferie D.* Jan. 9, 1978 286(1), p.145-148, In French with English summary. 8 refs.

Antarctic hemoglobin-free fish possess, besides white and cardiac muscles, a third type of striated muscle of yellowish appearance devoid of myoglobin which corresponds to the fish red muscles. Each of these three types differs from the others by its parvalbumin composition and lactate dehydrogenase isozymic distribution. (Auth.)

B-19792

Moyano G., H.I., **Bryozoan epizoa of *Laetmonice producta* Grube (Annelida, Polychaeta)** [Briozoos epizoos de *Laetmonice producta* Grube (Annelida, Polychaeta)], *Santiago de Chile. Instituto Antártico Chileno. Serie cientifica*, 1972 2(2), p.5-12, In Spanish with English summary. 6 refs.

The bryozoan epizoa encrusting the notosetae of *Laetmonice producta* Grube collected in the area from Bransfield Strait to Marguerite Bay have been studied. *Flustra tenuis* Kluge, 1914, *Hippothoa bougainvillei*, and *Melicerita latilaminata* Rogick 1956 were found on the parapodial setae of the polychaetous worms, and *Membranipora constantia* Kluge 1914 was encrusting the basal side of *Flustra tenuis*. The ancestrulae and early astogeny are described. (Auth.)

B-19793

Pefaur, J.E., Murua, R., **Ecological studies in Robert Island (South Shetland) 7. Birds of Robert Island Peninsula** [Estudio ecológicos en Isla Robert (Shetland del Sur) 7. Aves de la peninsula de Isla Robert], *Santiago de Chile. Instituto Antártico Chileno. Serie cientifica*, 1972 2(2), p.13-23, In Spanish with English summary. 24 refs.

The birds of Robert Island are catalogued as nesting and non-nesting birds. Species nesting are *Macronectes giganteus, Daption capensis, Occanites oceanicus exasperatus, Catharacta skua lönnbergi, Larus dominicanus austrinus* and *Sterna vittata gaini*. Depth, diameter and composition of the nest are described for each species. In addition, the distribution of colonies of the Copper Mine peninsula of Robert Island is indicated on a map. Several other species of birds occur on the peninsula but are not known to nest there. (Auth.)

B-19798

Racadot, J., **Slides on the antehypophyseal histology of the Weddell seal *(Leptonychotes weddelli* Lesson)** [Documents concernant l'histologie antéhypophysaire du Phoque de Weddell *(Leptonychotes weddelli* Lesson)], Fonction gonadotrope et rapports hypothalamo-hypophysaires chez les animaux sauvages, Paris, Masson et Cie, 1971, p.9-19, In French. Includes extended discussion. 13 refs.

DLC QP572.G6F66

This article is a commentary on a slide presentation on hypophyses of 2 leopard and 13 Weddell seals. Among the latter were 3 males, 3 non-pregnant females, 2 pregnant females and 2 lactating females. Of particular interest are the prolactin cells, the obvious activation of which during lactation leaves no doubt of their functional significance. The discussion which follows the author's remarks is primarily concerned with comparative physiology of the seal with other species and with technical problems in preparing tissue slides.

B-19806

Rudge, M.R., Campbell, D.J., **History and present status of goats on the Auckland Islands (New Zealand subantarctic) in relation to vegetation changes induced by man,** *New Zealand journal of botany*, June 1977 15(2), p.221-253, 73 refs.

Goats were liberated in at least 10 places on the Auckland Islands in the late nineteenth century as food for castaways. Only one population now survives, comprising about 100 animals. They live on the north-west side of Port Ross which is one of the driest and warmest parts of the main island. In summer 1972-73 the status of the goats and of their habitat was surveyed. At sea level the southern boundary of goat distribution was a shallow stream. They were constrained altitudinally by the distribution of suitable food sources, and by weather conditions in the upland. Virtually the whole day was spent feeding, and reproductive behavior, play or inactive rest were not seen. Because of the peat substrate, the goats had overgrown, split hooves and they ran poorly. Seventy-five percent were predominantly white or grey. Direct observation showed that open scrub and fine-grass swards were favored above forest, tussock grassland, and dense scrub as feeding areas. The goats do not endanger plant communities or rare species within their present range, and are not likely to spread. (Auth. mod.)

B-19807

Kraft, G.T., **Transfer of the New Zealand red alga *Tylotus proliferus* (Gracilariaceae, Gigartinales) to the genus *Gracilaria*,** *New Zealand journal of botany*, June 1977 15(2), p.495-502, 38 refs.

Reproductive material of *Tylotus proliferus* (Harvey) Kylin from the North Island of New Zealand has been examined and found to

conform to the genus *Gracilaria*. Because the name *Gracilaria prolifera* Reinsch is in current use for an alga from South Georgia in the subantarctic, the new name *G. truncata* is proposed, based on a prominent branch feature of the New Zealand species. Details of habit, vegetative morphology, and carposporophyte development of *G. truncata* are presented. The so-called "nutritive filaments" which characterize this and many other species of Gracilaria are discussed, and substitution of the term "traversing filaments" is suggested to avoid implying an unverified nourishment function of these structures. Some speculations on the possible relatives of *G. truncata* are made. (Auth.)

B-19808

West, K.R., Raven, P.H., **Novelties in Australian *Epilobium* (Onagraceae),** *New Zealand journal of botany.* June 1977 15(2), p.503-509, 4 refs.

Epilobium perpusillum Hausskn. (Onagraceae) has been recognized as a distinct Tasmanian endemic on the basis of newly collected material; a full description and illustrations are provided. Also, *Epilobium brunnescens* (Cockayne) Raven & Engelhorn subsp. *beaugleholei* West & Raven is described as new from a locality in Victoria, Australia; the species was formerly thought to be confined to New Zealand and Macquarie Island. These taxa resemble one another in habit, creeping and rooting beyond the point at which flowers are produced; their leaves are all opposite. Their presence in Australia suggests that a characteristic group of New Zealand species, including *E. brunnescens* and *E. nerteroides* A. Cunn., originated in Australia. (Auth. mod.)

B-19811

Trillmich, F., **Feeding territories and breeding success of South Polar skuas,** *Auk,* Jan. 1978 95(1), p.23-33, 19 refs.

Territorial and foraging behavior of the South Polar skua *Catharacta maccormicki* were studied in 1971-72 at the Cape Hallett Adélie penguin *Pygoscelis adeliae* rookery. The skua population was at maximum 98 pairs, and the Adélie penguin population was some 43,000 pairs. The size of the skuas' territories varied between 0.5 and 1.8 ha (between 730 and 3,190 penguin pairs). Areas between adjacent territories overlapped. The behavior of three dye-marked pairs in their territories is described. A large enough feeding territory in the penguin rookery apparently enabled certain skua pairs to subsist exclusively on a penguin diet throughout the whole skua breeding season. Skuas breeding farther away from the penguin rookery usually defended only nest territories, which were much smaller than the above all-purpose territories. They hunted in the northwest part of the rookery in "preferred feeding areas" that were not defended against other skuas. Some pairs apparently foraged at sea. The number of skuas hunting per unit area is about sixfold in the parts of the rookery used by skuas as preferred feeding areas, but no resulting decline in penguin breeding success could be found. The breeding success of skua pairs with feeding territories was significantly higher than that of pairs with preferred feeding areas. The possible causes of this difference are discussed. (Auth.)

B-19813

Luders, D.J., **Behaviour of antarctic petrels and antarctic fulmars before laying,** *Emu,* Oct. 1977 77(4), p.208-214, 11 refs.

Antarctic petrels *Thalassoica antarctica* and antarctic fulmars *Fulmarus glacialoides* nest in adjoining areas on Odbert and Ardery Islands, Wilkes Land. Observation of their arrival, nesting location, courtship displays and copulation revealed similarities but also some marked differences between the species. Antarctic petrels deserted the nesting area before laying, whereas antarctic fulmars probably remained at their nests. The full sequence of arrival, courtship and copulation was much more compressed in the antarctic petrels than in the fulmars. Courtship and copulation are described and discussed. (Auth.)

B-19814

Spencer, K.A., **Revision of the New Zealand Chloropidae,** *Royal Society of New Zealand. Journal,* Dec. 1977 7(4), p.433-472, 37 refs.

The 24 species of Chloropidae hitherto known from New Zealand and the Subantarctic islands have been revised, and 17 new species are described, including two from Chatham Island. These species are *Lasiopleura shewelliana, L. sulae: Conioscinella apterina, C. chathamensis, C. fulvithorax, C. grandis: Tricimba anglemensis, T. dugdalei, T. watti: Eutricimba kuscheli, E. walkerae: Siphunculina montana: Diplotoxa gemina, D. harrisoni, D. knighti, D. similis,* and *D. stepheni.* The endemic New Zealand genera *Apteroscinis* Malloch and *Apterosoma* Salmon are synonymized with *Tricimba* Lioy and *Diplotoxa* Loew respectively, and *Caviceps* Malloch (Australia) is established as the senior synonym of *Alphanotrigonum* Duda (Europe). Two genera—*Caviceps* Malloch and *Siphunculina* Becker—and one Australian species, *Siphunculina breviseta* Malloch, are recorded as new to New Zealand. Two genera—*Oscinosoma* Lioy and *Gaurax* Loew—are deleted from the New Zealand list. (Auth.)

B-19815

Nelson, J.S., **Fishes of the Southern Hemisphere genus *Neophrynichthys* (Scorpaeniformes: Cottoidea), with descriptions of two new species from New Zealand and Macquarie Island,** *Royal Society of New Zealand. Journal,* Dec. 1977 7(4), p.485-511, Refs. p.509-511.

Two new species of *Neophrynichthys* are described, *N. angustus* from New Zealand and *N. magnicirrus* from Macquarie Island. Both have a narrow and rigid interorbital with strongly sculptured roofing bones. *N. angustus* has dark brown spots on a light background and is larger, occurs at greater depths, and is wider ranging than its New Zealand compatriot *N. latus* (Hutton, 1975). *N. magnicirrus* has a large cirri-ornamented posterior nostril tube and long frilled rostral cirri. Data from additional material of the Australian *N. marcidus* McCulloch, 1926, are presented. A key is given to the five recognized species, a review of the genus is presented, and the systematic relationships of *Neophrynichthys* are discussed. (Auth.)

B-19817

Kock, K.-H., **Fish without blood** [Fische ohne Blut?], *Umschau,* Nov. 15, 1977 77(22), p.737-739, In German with English summary. 7 refs.

Ice fish (Chaenichthyidae) a fairly common fish family in Antarctic waters show a nearly complete reduction of hemoglobin and erythrocytes. Their biology and differences in blood physiology in comparison with red blooded Antarctic fish are described.

B-19843

Crane, H.R., Griffin, J.B., **University of Michigan radiocarbon dates XII,** *Radiocarbon,* 1968 10(1), p.61-114, Refs. p.111-114.

Mummified skin and flippers of crabeater and Weddell seals from Taylor Valley, Lake Bonney and Nussbaum Riegel are examined by means of radiocarbon dating procedures. Nine samples are reported. Dates are satisfactory and indicate that seals wandered in at random and that degree of preservation is not closely related to age. Possibly seepage of groundwater could have contaminated parts in contact with ground and lowered their apparent age.

B-19846
Moyano G., H.I., ***Romancheina asymmetrica*** **sp. nov., a new species for Antarctica and a key to antarctic and magellanic species of Exochellidae (Bryozoa, Cheilostomata)** [*Romancheina asymmetrica* sp. nov., nueva especie de la Antártica y clave para las especies antárticas y magallanicas de Exochellidae (Bryozoa, Cheilostomata)], *Sociedad de Biología de Concepción. Boletin.* 1975 Vol.49, p.61-69, In Spanish with English summary. 14 refs.

A new species, *Romancheina asymmetrica* sp. nov., from samples collected in Deception Island, South Shetlands, is described. The new species differs from the previously known *Romancheina martiali* in the number and structure of the avicularia, the structure of the frontal wall and in the ancestrular pericyst. Also included are a key for the known species of the genera *Escharoides, Romancheina* and *Exochella* that occur in Antarctica and in the southernmost tip of South America, and a discussion on the relation among the families Umbonulidae and Exochellidae as between their genera. (Auth.)

B-19853
Simpson, R.D., **Reproduction of some littoral molluscs from Macquarie Island (Subantarctic),** *Marine biology,* 1977 44(2), p.125-142, Refs. p.141-142.

The reproduction of 9 species of littoral molluscs from Macquarie Island was examined. The mode of larval development is reported for all species, and the reproductive patterns for 7 are described from collections taken monthly over a period of 1 year. Two species release gametes for external fertilization, whereas the other 7 have non-pelagic development via brooding or the laying of egg cases; some of these findings were deducted from examination of gonads rather than by direct observation. Features of reproduction important in any correlation between a littoral animal's reproduction and its habitat are discussed, and relationships between pelagic and non-pelagic development of the Macquarie molluscs and (a) distribution in the local environment and (b) habitat are drawn. The widely recognized correlation between species having a non-pelagic development and small number and large size of eggs is considered as a method for predicting the type of larval development (in terms of pelagic versus non-pelagic) from an examination of the ovary. It is suggested that further data on modes of development could be obtained from specimens of marine invertebrates collected throughout southern latitudes and that such data would enhance zoogeographical interpretations. (Auth.)

B-19864
Bakus, G.J., Garling, W., Buchanan, J.E., **Antarctic krill resource: prospects for commercial exploitation,** *Tetra Tech, Inc. Tetra Tech report,* Feb. 1978 TC-903, 149p., Refs. p.129-149. Map in pocket.

This report is divided into the following chapters: Antarctica—the setting; krill biology; antarctic marine ecosystem; harvesting antarctic krill; processing systems; marketing of krill; information gaps; environmental impact; and krill management and conservation. The authors conclude that, while there is little information available concerning the environmental impact of man in the Antarctic, the greatest potential effect on the southern ocean ecosystem would probably occur from the overexploitation of krill. They stress the information gaps remaining and the vast number of other species, including man himself, that might suffer if the krill stocks are significantly reduced.

B-19867
Lathbury, G., **H.M.S. *Endurance*–Passage to the Antarctic —October 1969-May 1970: Observation of seabirds,** *Sea swallow,* 1971/1972 Vol.22, p.10-15.

Sir Gerald Lathbury accompanied the crew of the H.M.S. *Endurance* on her passage along the west coast of South America to the Straits of Magellan, to the Falkland Islands, the Drake Passage, the South Orkneys, the Antarctic Peninsula, and home. He records the birds he spotted from the ship and while he visited some of the islands by small boat and by air.

B-19885
Popov, L.A., Krylov, V.I., **Biology of the South Shetland Islands leopard seal** [Materialy po biologii morskogo leoparda raĭona IUzhnykh Shetlandskikh ostrovov], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten',* 1977 No.96, p.26-29, In Russian. 5 refs.

Leopard seals congregate in small groups and sporadically in the South Shetlands. During the austral summer the animals visited the islands in small groups or singly, stayed briefly and did not appear to breed or give birth while there. Thus, these observations support the current hypothesis that the leopard seal is a primarily nomadic animal, living, breeding, and moulting on the drifting sea ice. The seals seem to visit the South Shetlands mostly in the spring, when local fish and bird populations are largest.

B-19886
Saenko, A.F., **Methodology of Adélie penguin mass blood sampling and results of serological studies** [Metodicheskie osobennosti massovogo zabora krovi u pingvinov Adeli i rezul'taty ee serologicheskikh issledovaniĭ], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten',* 1977 No.96, p.30-34, In Russian. 5 refs.

The method by which 5-8 ml blood samples were taken from Adélie penguins is described. A small incision was made in the vein of the foot, blood taken and the wound sutured. Within 15-20 min of removal of the ether, the birds were ready to return to the rookery; no fatalities were incurred. Immunological studies were then carried out with the blood serum collected. Antibodies to several human viruses and antihemagglutinins to a number of bird and animal viruses were found in the penguin serum. No antihemagglutinins to arboviruses were observed.

B-19888
Popov, L.A., Krylov, V.I., **Data on the biology of crabeater seals in the South Shetland Islands** [Nekotorye dannye po biologii tiulenia-kraboeda raĭona IUzhnykh Shetlandskikh ostrovov], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten',* 1977 No.96, p.41-45, In Russian. 5 refs.

Sixty-six percent of the crabeater seals observed in the Fildes Peninsula were seen in the spring. Fall and winter are marked by the paucity or complete absence of this species. They appeared to feed heavily on the large krill stocks that occur in this region in the spring. The seals stay only briefly on land, rest and eat, then return to the drifting ice. They do not breed there: in fact, the majority of the individuals observed were not sexually mature.

B-19892
Popov, L.A., Krylov, V.I., **Kerguelen seals on King George Island** [Kergelenskiĭ iuzhnyĭ morskoĭ kotik o. King-Dzhordzh], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten',* 1977 No.96, p.66-71, In Russian. 5 refs.

The seals *Arctocephalus gazella* and *Arctocephalus tropicalis* that are found on King George Island appear to come only for a brief rest; they arrive exhausted, stay only a day or two or even less without going into the water, and then leave. This population count noted highest concentrations in Jan. through April. By August the island is bare of seals altogether. Numbers of King George Island seals indicate that a gradual but steady comeback is being staged by these marine mammals once nearly extinct from human exploitation.

B-19895
Wilson, R.B., **Evaluation of possible United States involvement in an antarctic krill fishery,** Cambridge, Massachusetts Institute of Technology, Aug. 1976, 118p., 96 refs. M. Sci. thesis.

The current knowledge concerning the krill's biology, distribution dynamics in the Antarctic Ocean and swarming habits is discussed. Locating devices, harvesting techniques, processing methods and end-product uses are investigated and related to present United States capabilities. An economic analysis of a possible United States krill fishery venture is conducted. It is suggested that funding will be required to induce industry to attempt the initial effort, but that with advances in the harvesting and locating technologies, the venture can support itself without external financial assistance. (Auth.)

B-19896
Condy, P.R., **Results of the third seal survey in the King Haakon VII Sea, Antarctica,** *South African journal of antarctic research,* 1976 Vol.6, p.2-8, 30 refs.

The third in the series of annual censuses in the King Haakon VII Sea was carried out in Jan. and Feb. 1976. An area of 193 sq km was surveyed from the M.V. *RSA*. The population density of crabeater seals and leopard seals compared well with the results of other workers and the two previous censuses in the King Haakon VII Sea. The density of Ross seals compared as well with the results of two previous surveys, and is higher than recorded elsewhere by other authors. The percentage species composition of the sample reflected the density relationship. Crabeater and Ross seals occurred in largest numbers on ice floes between 06h00 and 18h00, with a peak haul-out period between 08h00 and 14h00. Weddell seals were most commonly observed between 14h00 and 16h00, and leopard seals were only seen between 04h00 and 18h00. (Auth.)

B-19897
Frost, P.G.H., Best, P.B., **Design and application of a coded format for recording observations of cetaceans at sea,** *South African journal of antarctic research,* 1976 Vol.6, p.9-14, 14 refs.

A numerical format for recording details of the main identifying features of cetaceans seen at sea is given. Each identifying character is divided into a number of character states which are coded numerically. This coded format is intended primarily for recording details of cetacean sightings by observers who are not experienced in cetacean identification, including those sightings for which a positive identification is impossible. This should minimize the risk of incorrect identifications and loss of potentially useful data incorporated in such sightings, as well as facilitate the subsequent retrieval of such data for use in broad analyses of the trends in cetacean distribution and abundance. The format is designed here for the southern Indian Ocean and is applied to a series of 34 observations made in that area during Mar. and Apr. 1976. The most frequently recorded species was the sperm whale which was distributed between 25 and 40S. New distributional data are reported for the common pilot whale and Wilson's hourglass dolphin. A possible record of the spectacled porpoise is noted. (Auth.)

B-19899
Johnstone, G.W., Shaughnessy, P.D., Conroy, J.W.H., **Giant-petrels in the South Atlantic: new data from Gough Island,** *South African journal of antarctic research,* 1976 Vol.6, p.19-22, 22 refs.

The Northern and Southern Giant-petrels nest at islands between the Subtropical Convergence and the Antarctic continent, their breeding ranges overlapping at some islands near the Antarctic Convergence. Differences between the species include date of onset of laying, type of nest-site, and coloration of plumage and bill-tip. A review of the literature suggested that populations nesting at islands in the South Atlantic Ocean north of the Antarctic Convergence do not conform to either species. New observations from Gough Island in Oct. and Nov. 1973 support this suggestion and confirm that in some respects these birds combine the characteristics of both species. However, more information is needed about the population of Giant-petrels at Gough Island and those at the other breeding stations in this region (Falkland Islands and Staten Island) before their taxonomic status can be assessed. (Auth.)

B-19900
Shaughnessy, P.D., Fairall, N., **Notes on seabirds at Gough Island,** *South African journal of antarctic research,* 1976 Vol.6, p.23-25, 20 refs.

Observations on seabirds at Gough Island were made from Oct. 13 to Nov. 11, 1973. A chick of the Atlantic Petrel was collected and is described. Chicks of this species have not been reported previously. A nest of the Giant-petrel was found at which an adult male was guarding a chick. Giant-petrels at Gough Island combine characteristics of *Macronectes giganteus* (green bill tips) and *M. halli* (breeding relatively early in sheltered localities and attending ships at anchor). The head and nape of nesting Yellow-nosed Albatrosses appeared darker than indicated by most descriptions of the bird. Cape Pigeons were seen on eight occasions from M.V. *RSA* near the island. Evidence is provided for a pre-egglaying exodus of the Greater Shearwater. Incidental observations are included on Rockhopper Penguins, Sooty Albatrosses, Broad-billed Prions, and Southern Skuas. (Auth.)

B-19902
Frost, P.G.H., Grindley, J.R., Wooldridge, T.H., **Report on South African participation in cruise MD08 of MS *Marion Dufresne,* March-April 1976,** *South African journal of antarctic research,* 1976 Vol.6, p.28-29.

This report summarizes the South African contribution to the joint research program aboard the *Marion Dufresne*, comprised of scientists and technicians from France, South Africa, the U.S., Portugal, and Canada. Details of the cruise course, station locations, and local noon positions of the *Marion Dufresne* during the cruise are given. The program included studies of zooplankton and marine benthos around the Crozet Archipelago and the Prince Edward Islands, and observations on the distribution and abundance of seabirds in the southwestern sector of the Indian Ocean. Preliminary conclusions are drawn.

B-19903
Cooper, J., **Seasonal and spatial distribution of the Antarctic Tern in South Africa,** *South African journal of antarctic research,* 1976 Vol.6, p.30-32, 9 refs.

The Antarctic Tern, *Sterna vittata*, is a regular winter visitor to South Africa, being present from May to Oct. Twelve day-roosts were located in the southernmost part of South Africa, containing a total of 2,148 birds. Most of the roosts were situated on rocky headlands along the mainland coastline, and two were on offshore islands. An old South African breeding record needs verification. (Auth.)

B-19906
DeVries, A.L., Eastman, J.T., **Lipid sacs as a buoyancy adaptation in an antarctic fish,** *Nature,* Jan. 26, 1978 271(5643), p.352-353, 15 refs.

The nototheniid *Pleuragramma antarcticum* Boulenger, unlike other members of this family, spends its life swimming in the water, at times beneath a cover of sea ice. Although *Pleuragramma* lacks a swim bladder, it has been observed to remain nearly motionless in the water when placed in an aquarium. Furthermore, its slow swimming speed and general body morphology appear to preclude the use of forward motion and associated hydrodynamic lift as a mechanism for maintaining position in the water column. In -1.8C seawater,

specimens of *Pleuragramma* weighed between 0.5 and 1% of their weight in air indicating they were almost neutrally buoyant. It is suggested that this reduction in density results from the accumulation of lipid in intermuscular and subcutaneous sacs, and from a reduction in skeletal ossification.

B-19907

Sagar, P.M., **Birds of the 1976-77 Snares Islands expedition,** *Notornis*, Dec. 1977 24(4), p.205-210, 4 refs.

Four new species, Black Shag, Feral Pigeon, Shining Cuckoo and Long-tailed Cuckoo, and one new breeding species, Chaffinch, were recorded from the Snares in the summer of 1976-77. A total of 57 species (23 breeding species) has now been recorded from the Snares. The origins of the new recorded species are discussed. Several interesting band recoveries are presented. (Auth.)

B-19908

Edgar, A.T., **Classified summarised notes,** *Notornis*, Dec. 1977 24(4), p.246-279.

A collection of notes is presented on various bird species recorded in the New Zealand area during 1976-77, including the Snares Islands.

B-19940

Berry, R.J., **Genetic variation in wild house mice: where natural selection and history meet,** *American scientist*, Jan.-Feb. 1978 66(1), p.52-60, 42 refs.

Research was conducted on wild house mice on a Welsh island in order to better understand the genetic variation in wild mouse populations. It was found that considerable genetic changes did occur. Strong natural selection undoubtedly affects the frequency of traits in the Skikholm I. mice. The most spectacular change was in the genotypic proportions at the *Hbb* locus, a gene in the first linkage group of the mouse that determines the order of amino acids in the beta chain of the globin of the blood. Comparison of the biochemical variation in the mouse population on Skokholm is made with mouse populations in other areas including those at Macquarie and Marion Is. The mice of these islands breed throughout the year, thus there is no question of seasonal selection as on Skokholm. Nevertheless, there are significant genetic changes with age.

B-19952

Berry, R.J., Peters, J., Van Aarde, R.J., **Sub-antarctic house mice: colonization, survival and selection,** *Journal of zoology (London)*, Jan. 1978 184(1), p.127-141, Refs. p.139-141.

House mice have colonized and survived successfully on a number of subantarctic islands, where the mean annual temperature is only about 5C, but where there is little seasonal fluctuation in climate. Surprisingly this allows almost continuous breeding. On at least two islands (Macquarie and Marion), there are significant changes in gene frequency in electrophoretically detected enzymes between young (less than three months of age) and old animals from the same population. This indicates natural selection acting in opposite directions at different stages of the life cycle. However, the genetical compositions of the Macquarie and Marion populations are more distinct from each other than either is from most British samples. This means that detailed studies of the subantarctic mouse populations are likely to reveal much about local adaptation, while comparison between the responses of different populations may lead to important generalizations about the possible reaction to evolutionary challenges of a species living close to its physiological limit. (Auth.)

B-19955

Kabata, Z., **Parasitic Copepoda of fishes,** *British, Australian and New Zealand Antarctic Research Expedition, 1929-1931. Reports. Series B (Zoology and botany)*, June 1965 8(6), p.5-16, plus 7 plates, Refs. p.15-16.

The parasitic Copepoda of fishes discussed in this report are few, comprising only six species. Five of these species were collected by the B.A.N.Z.A.R. Expedition, while the sixth (*Chondracanthodes bulbosus* sp. nov.) belongs to the collections by the earlier A.A. Expedition of 1911-1914. In addition to these species described in the report, the collection contains the remains of a lernaeocerid copepod, consisting of the head and long neck region, mummified in the flesh of a "garfish." (Auth. mod.)

B-19956

Lofthouse, P., **Cladocera, Ostracoda, and freshwater Copepoda,** *British, Australian and New Zealand Antarctic Research Expedition, 1929-1931. Reports. Series B (Zoology and botany)*, Apr. 1967 8(7), p.141-144., 18 refs.

The collection consists of 108 tubes taken primarily from Kerguelen and Macquarie Islands. There are 5 species of Cladocera, 4 species of Copepoda, 3 of freshwater Ostracoda, and 11 of marine Ostracoda. None of these is new to science, although one subspecies, *Pleuroxus aduncus wittsteini*, has been raised as a possible geographical variation. (Auth.)

B-19957

Lee, K.E., **Oligochaeta from subantarctic islands,** *British, Australian and New Zealand Antarctic Research Expedition, 1929-1931. Reports. Series B (Zoology and botany)*, Apr. 1968 8(8), p.149-165, 22 refs.

Megascolecidae and some Lumbricidae from the B.A.N.Z.A.R.E. collections of Oligochaeta have been examined and identified by the author, and this paper is concerned principally with the Megascolecidae of the subantarctic islands (Crozet, Kerguelen, Heard and Macquarie Islands) visited by the expedition during 1929-31, and with their systematic and biogeographic relationships to Megascolecidae from other southern islands and land masses. (Auth. mod.)

B-19958

Prudhoe, S., **Cestodes from fish, birds and whales,** *British, Australian and New Zealand Antarctic Research Expedition, 1929-1931. Reports. Series B (Zoology and botany)*, Nov. 1969 8(9), p.171-193, 30 refs.

The cestodes collected by the B.A.N.Z.A.R. Expedition 1929-31 are described and systematized. Cestodes from seals are not included. The collection contains 33 cestodes, of which six are new: *Eutetrarhynchus australis, Megalonchos musteli, M. dubius, Parabothriocephalus johnstoni, Bothriocephalus Kerguelensis*, and *Lateriporus mawsoni*. Several previously described forms are now recorded from new hosts. (Auth. mod.)

B-19959

Madsen, F.J., **Ophiuroidea,** *British, Australian and New Zealand Antarctic Research Expedition, 1929-31. Reports. Series B (Zoology and botany)*, Nov. 1967 9(3), p.123-145, 51 refs.

The B.A.N.Z.A.R. Expedition collection of ophiuroids was obtained at 16 stations in the East Antarctic, at a number of stations in the Kerguelen area and at one station off Macquarie Island. A total of 49 antarctic species (three of which are new) and 7 subantarctic ones were comprised by the collection. The collection is systematized and described. It appears that most ophiuroids occurring in the Antarctic are circumpolar in their distribution. (Auth. mod.)

B-19978
Parker, B.C., ed, **Environmental impact in Antarctica,** Blacksburg, Virginia Polytechnic Institute and State University, 1978, 390p., Refs.

This compilation contains seventeen papers by scientists addressing impact assessments, monitoring, and the potential impact of man's activities in the Antarctic. Four of the papers are reprinted from the Antarctic journal of the United States (items no. 6B-11901, 7B-13119, 29-1319 or 7B-14178, and 29-1938 or 7B-14333) and a fifth from the Polar record (item no. E-19350). The contributions are prefaced by a foreword and an introduction and historical background. Concerning environmental impact, the U.S. National Environmental Policy Act (NEPA) was signed into effect Jan. 1, 1970; and at the Sixth Antarctic Consultative Meeting (Oct. 1970) in Tokyo five recommendations regarding the regulation of environmental impact in Antarctica were presented. Significant progress toward a sounder international environmental impact policy for Antarctica has resulted through the Scientific Committee on Antarctic Research (SCAR). SCAR subcommittees on conservation and mineral resource exploitation have been established, and a new category has been added to protect sites of special scientific interest. For individual papers not cited previously see B-19979, B-19980, B-19982, B-19983, B-19985 through B-19987, E-19981, and G-19984, or 32-3113 through 32-3117.

B-19979
Parker, B.C., McWhinnie, M.A., Elliott, D., Reed, S.C., Rutford, R.H., **Ross Ice Shelf Project environmental impact statement July, 1974,** MP 1075, Environmental impact in Antarctica, edited by B.C. Parker, Blacksburg, Virginia Polytechnic Institute and State University, 1978, p.7-36, 13 refs.

MP 1075

The scientific objectives of the Ross Ice Shelf Project (RISP) are to drill into the ice shelf to investigate the physical, chemical, biological, and geological conditions in the ice shelf, the water mass beneath the ice, and the soft sediments and bedrock at the bottom of the sea, and to use the data obtained for interpretation of the present conditions and the history of this portion of Antarctica. This environmental impact assessment describes the proposed action, summarizes the scientific studies to be undertaken, and outlines remedial and protective measures, unavoidable adverse impacts, and alternatives to the proposed action. It is anticipated that the majority of the impacts will be short-term and extremely localized, such as those associated with the camp and laboratory facility on the Ross Ice Shelf during the period of drilling. These impacts will be monitored throughout the RISP operations. The pristine nature of the surface should be restored fully within one year. It is stressed that the likelihood of penetrating a hydrocarbon trap is remote, but should this occur rendering an uncontrollable release of hydrocarbons, the impact on the environment could be quite severe. On a scale of 1 to 10 this possibility is assigned a value of 5.

B-19980
Parker, B.C., Mudrey, M.G., Jr., Cartwright, K., Cameron, R.E., McGinnis, L.D., **Environmental appraisal for the Dry Valley Drilling Project phases III, IV, V (1973-74, 1974-75, 1975-76),** Environmental impact in Antarctica, edited by B.C. Parker, Blacksburg, Virginia Polytechnic Institute and State University, 1978, p.37-143, 7 refs.

This appraisal describes the Dry Valley Drilling Project (DVDP), outlining its objectives, the region to be studied, and details of drilling operations, reviews the potential impacts of the drilling and scientific field operations on antarctic soil and lake ecosystems, and outlines procedures for their prevention, reduction, or remedy. Proposed actions which may affect the existing environment are well drilling, emplacement of tailings, drilling fluid discharge, introduction and survival of exotic microorganisms, accidental explosions, accidental spills and leaks, operational failures, accidental release of natural hydrocarbons, and environmental violations. Only the accidental release of natural hydrocarbons could have deleterious environmental impact on the system in McMurdo Sound. The first four actions can be controlled effectively by careful adherence to the field operations plans. The remaining five will probably arise infrequently; and if they do, prompt clean-up or other remedial measures will minimize their impacts.

B-19982
Parker, B.C., Howard, R.V., Allnutt, F.C.T., McGinnis, L.D., **Summary of environmental monitoring and impact assessment of the DVDP,** Environmental impact in Antarctica, edited by B.C. Parker, Blacksburg, Virginia Polytechnic Institute and State University, 1978, p.211-254, Includes critique by L.D. McGinnis. 20 refs.

This paper presents methods used for monitoring and evaluating the environmental impact of DVDP, summaries of monitoring results, discussions of the strengths and weaknesses in data, baseline data, and conclusions and recommendations. Air, soil, water, sediment core, and ice core sampling methods have been used. The sites sampled include New Harbor, Lakes Fryxell, Vanda, Vida and Chad, Don Juan Pond, Commonwealth Glacier, North Fork of Wright Valley, South Pole station, McMurdo Sound, Dufek Massif, and Barwick Valley. The impact of the DVDP was most evident on the proximal soil ecosystem. Vertical profile studies of soil organisms are considered the best method of monitoring the environmental impact of major projects like DVDP. In contrast to soil microbiological monitoring, it is concluded that sampling of microbial aerosols is of limited value for evaluating environmental impact. The superiority of the drilling fluid DFA for use in the dry valleys was demonstrated. Water samples from Don Juan Pond yielded unidentified bacteria.

B-19983
Parker, B.C., **Potential impact on Lake Bonney of activities associated with modeling freshwater antarctic ecosystems,** Environmental impact in Antarctica, edited by B.C. Parker, Blacksburg, Virginia Polytechnic Institute and State University, 1978, p.255-278, Refs. p.276-278.

This paper discusses the historical background of man's activities at Lake Bonney, activities associated with the Lake Bonney research program from 1972-75, characteristics of the Lake Bonney ecosystem, the methods used to assess the environmental impact of the program, and the results of the assessment. The potential impact of the Dry Valley Drilling Project (DVDP), which proposed drilling in or near Lake Bonney, and that of the Lake Bonney project are compared. The impact assessment matrix method was used to evaluate the potential effects of 17 activities on 27 categories of environment. The results for the Lake Bonney project reveal relatively few impacts of a serious or terminal level. Most of these would result from explosions, spills and leaks, other accidental phenomena, or willful acts. It is also indicated that the overall impact of DVDP on Lake Bonney is potentially greater (in some cases moderately to severely) than that for the Lake Bonney Project.

B-19985
McWhinnie, M.A., **Potential impact of harvesting zooplankton on the south circumpolar ecosystem,** Environmental impact in Antarctica, edited by B.C. Parker, Blacksburg, Virginia Polytechnic Institute and State University, 1978, p.295-331, Refs. p.326-331.

This perspective attempts to balance the increasingly inevitable harvesting of antarctic krill with scientifically based control measures resulting from the best judgments on species and ecosystem conservation. The evaluation covers standing crops of zooplankton and

trophic relations, reproduction and development of krill, chemical composition and nutrient value, technology and commercial exploitation, increasing world interest in harvesting marine stocks, stability of polar ecosystems, and future considerations. A commonly held figure for the surplus standing crop of krill centers near 100 million tons. Large populations of higher organisms depend primarily or exclusively on this resource for food. The Soviet Union has harvested krill for food production, animal food supplements, and experimentation to promote development of artificial swarms to enhance catching efficiency. Norway, New Zealand, Japan, the U.K., South Africa, West Germany, and Poland have also turned their attention to this food potential. It is urged that a structured krill convention be developed to regulate the krill fishing industry in antarctic seas and to provide essential information for the conservation of krill, guaranteeing minimum effects on all dependent species in the ecosystem.

B-19986

Lipps, J.H., **Man's impact along the Antarctic Peninsula,** Environmental impact in Antarctica, edited by B.C. Parker, Blacksburg, Virginia Polytechnic Institute and State University, 1978, p.333-371, Refs. p.369-371.

This paper addresses past, present, and future environmental problems associated with man's activities in the Antarctic Peninsula region. During the past century over 35 bases or longterm camps have been established in the Peninsula region. The sites of the scientific activities and their environmental impacts are summarized. Five nations currently occupy land bases and have regular ship traffic in the region of the Antarctic Peninsula. Year round, Argentina operates 4 bases, Chile 3, the U.K. 2, and the Soviet Union and the U.S. 1 each. Problems associated with the operation of the U.S. Palmer Station, *Hero,* and the abandoned U.S. bases are discussed and illustrated as examples. The problems include solid waste, garbage, burning, dumping at sea, fuel transfer, waste disposal from ships and by remote field parties, tourism, and ship wrecks. Scientific activities will continue to impact the environment, but it is expected that the Antarctic Treaty nations will follow the outlined environmental guidelines so that the overall impact will be slight. The greatest immediate threat to the Antarctic Peninsular environment is increasing tourism. Examination of the Peninsula region's potentially valuable living and mineral resources indicates major interest in krill.

B-19987

Müller-Schwarze, D., Belanger, P., **Man's impact on antarctic birds,** Environmental impact in Antarctica, edited by B.C. Parker, Blacksburg, Virginia Polytechnic Institute and State University, 1978, p.373-383, 18 refs.

The adverse effects on breeding populations of antarctic birds of direct exposure to man's activities in the Antarctic, of pollution and diseases that originate in other continents, and of harvesting the birds' food organisms are examined. Severe disturbances to bird rookeries can be caused by depriving them of breeding space, approaching too closely on foot during the breeding season, the accumulation of refuse and garbage, support activities, and tourists. Feeding kitchen garbage to birds that would naturally hunt for prey in rookeries can drastically change relationships between bird species. DDT, PCB's, and heavy metals have been documented in antarctic birds; and recent studies have revealed five serotypes of salmonella in fecal samples of Adelie penguins and South Polar skuas. The effects of commercial krill fishing on antarctic birds has yet to be studied. Recommendations to minimize the effects of man's activities in Antarctica are outlined.

B-19994

Bessarabov, B.F., Uriupova, G.M., Sushkova, N.K., Gontsova, L.P., **Krill meal as poultry feed** [Krilevaia muka pri vyrashchivanii ptitsy], *Veterinariia,* Aug. 1976 No.8, p.41-43, In Russian.

The addition of 3% krill meal to poultry feed was shown to aid productivity, improve growth, and increase market value of fowl. Antioxidants should be added to the meal to preserve the quality of the feed.

B-19995

Bryden, M.M., Erickson, A.W., **Body size and composition of Crabeater seals *(Lobodon carcinophagus),* with observations on tissue and organ size in Ross seals *(Ommatophoca rossi),*** *Journal of zoology (London),* June 1976 179(2), p.235-247, 19 refs.

Linear body measurements and body weights of 17 Crabeater seals and four Ross seals were recorded, and the relationships of weight to linear dimensions were calculated. There were no significant differences between sexes of these relationships in Crabeater seals. All Ross seals were males. The major body components (blood, fat, skin, muscle, bone, connective tissue and viscera) of seven Crabeater seals were weighed after dissection. Blood, fat and skin of two Ross seals were weighed. Weights of 22 visceral organs of the same animals, and linear bone dimensions of eight Crabeater seals and skull measurements of five Ross seals were recorded. There was no significant difference between sexes or ages in body composition of Crabeater seals. Relatively, Crabeater and Ross seals had less blood (9-10% body weight) than Elephant seals, and less fat (21-22% body weight) than most other marine mammals. The low body fat content may have been attributable to season and physiological status of the animals when dissected. The percentages of body weight represented by the other major components of Crabeater seals were: skin 8%, muscle 44%, bone 10%, connective tissue 0.7% and total viscera 8%. These figures, and the relative sizes of individual organs, were discussed in relation to their possible function in Crabeater and Ross seals. (Auth.)

B-19996

Hermosilla, J.G., **Contribution to the knowledge of antarctic dinoflagellates and tintinnids. 1. Plankton collected in December 1969** [Contribución al conocimiento de los dinoflagelados y tintínidos de Antártica. 1. Plancton colectado en diciembre, 1969], *Gayana (Zoología),* 1975 No.34, 55p., In Spanish with English summary. Refs. p.32-33.

DLC QL243.G38

Dinoflagellates and Tintinnids from 30 surface and 17 vertical antarctic plankton samples, collected in Bahía Chile (Isla Greenwich) and Bahía Foster (Isla Decepción) in December, 1969, have been studied. A few samples taken in Bahía South (Isla Daumer) in January, 1965, have been also analyzed. The results revealed the presence of 10 dinoflagellate species, 6 tintinnid species and 1 silicoflagellate species; they were more frequent and abundant in those samples collected in Bahía Foster. Scarce specimens were usually found in a few samples from Bahía Chile. *Peridinium archiovatum* found inside Bahía Foster are greater in size than those found out of it. The zooplankton is abundant (specially nauplius of copepods) inside Bahía Foster. Geographic distribution of studied species is enlarged. Dinoflagellates and Tintinnids were found to be very scarce in vertical samples (50-25m). (Auth.)

B-20001

Everson, I., **Living resources of the Southern Ocean,** Rome, Food and Agriculture Organization of the United Nations, Sep. 1977, 156p., GLO/SO/77/1, Refs. p.140-156.

This report is one of a series compiled by FAO under the preparatory phase of the Southern Ocean Fisheries Survey Program. The long-term objective of the program is to improve the knowledge of the nature, magnitude and distribution of the living resources of the

Southern Ocean (south of latitude 45S), with a view to assisting in their eventual rational utilization. The immediate activities of the preparatory phase (to continue until the end of 1977) include a review of the present information on the distribution and magnitude of the living resources of the Southern Ocean; a review and evaluation of the present state of exploitation and utilization of these resources; and the establishment of a system for regular compilation of statistical and other information about them. In this report, current knowledge is presented on the magnitude and distribution of the living resources of the Southern Ocean, including zooplankton, benthos, krill, cephalopods, fish, whales, seals and birds.

B-20002

Eddie, G.O., **Harvesting of krill,** Rome, Food and Agriculture Organization of the United Nations, Sep. 1977, 76p., GLO/SO/77/2, 23 refs.

This report presents available knowledge on the harvesting of antarctic krill. It indicates some of the technical and operational problems that appear to inhibit the production of significant amounts of food or animal feeding stuffs from this resource and examines the practicality of various possible systems of harvesting. Present location, detection, and capture methods are reviewed. Various factors affecting the design and choice of fishing vessels, their gear and equipment, and supporting systems are discussed, and information still needed by the vessel designer and investment analyst before they can attempt detailed estimates of costs and earnings is outlined.

B-20003

Grantham, G.J., **Utilization of krill,** Rome, Food and Agriculture Organization of the United Nations, Sep. 1977, 61p., GLO/SO/77/3, Refs. p.52-61.

This report reviews available information on the technology of utilization of antarctic krill. Consideration is given to the biochemical and technological properties of krill, to the reported processing techniques, and to product applications and markets. While process and product development is proceeding rapidly, no one obvious product application has emerged. Likely product spectra will vary from country to country. Process technology is advanced; products are generally sophisticated and costly. Assistance will be necessary to develop alternative technologies and products suited to the developing countries. (Auth.)

B-20007

Aleksandrova, V.D., **Geobotanical regions of the Arctic and Antarctic** [Geobotanicheskoe raĭonirovanie Arktiki i Antarktiki], Komarovskie chteniia, Vol.29, Leningrad, Nauka, 1977, 188p., In Russian. Refs. p.159-176.

DLC QK474.A43

The geobotanical regions of Antarctica are discussed under two general headings: subantarctic tussock grasses, and plants of the antarctic polar desert. Both coastal and continental ice-free areas are considered and the species which compose their phytocenoses listed.

B-20010

Zwick, P., **Edwardsininae (Diptera:Blephariceridae): transantarctic dispersal or relict distribution,** *International Association of Theoretical and Applied Limnology. Proceedings,* Dec. 1975 19(4), p.3164-3167, 7 refs.

Edwardsina have been recently assumed to be among antarctic faunal elements. The author feels that relict distribution from a formerly much more widely distributed group rather than direct spread across Gondwana is the explanation for their present-day locations.

B-20016

Spurr, E.B., **Diurnal activity of Adelie penguins *Pygoscelis adeliae* at Cape Bird,** *Ibis,* Apr. 1978 120(2), p.147-152, 16 refs.

Activity cycles of non-breeding Adelie Penguins were investigated at Cape Bird. There was continuous light during the observation period, but none the less regular fluctuations of light intensity and temperature were maintained. The penguins had no single period of rest, but were active throughout the 24 hours. However, there were statistically significant diurnal variations in the levels of certain activities among non-breeders, with an overall reduction in activity-levels in the middle of the day, especially on warm midsummer afternoons. It is suggested that this cyclic activity minimum may be associated with the low heat tolerance of Adelie Penguins. (Auth.)

B-20017

Vinogradov, M.E., ed., **Marine biology. Vol.2. Biological productivity of the ocean** [Biologiia okeana. Tom 2. Biologicheskaia produktivnost' okeana], Moscow, Nauka, 1977, 399p., In Russian. Refs. p.340-379.

DLC QH91.B55

This is a collection of chapters contributed by a number of authors on the following topics: structure and development of marine cenoses; pelagic cenoses, their structure and function; benthic cenoses; production; modelling pelagic ecosystems; marine resources and potential for exploitation; and the effect of pollution on marine organisms and systems. A discussion of ecosystems of temperate and cold waters of the southern hemisphere appears on pp.68-90.

B-20021

Raymond, J.A., DeVries, A.L., **Adsorption inhibition as a mechanism of freezing resistance in polar fishes,** *National Academy of Sciences, Washington, D. C. Proceedings,* June 1977 74(6), p.2589-2593, 46 refs.

Polar fishes are known to have serum proteins and glycoproteins that protect them from freezing, by a noncolligative process. Measurements of antifreeze concentrations in ice and scanning electron micrographs of freeze-dried antifreeze solutions indicate that the antifreezes are incorporated in ice during freezing. The antifreezes also have a pronounced effect on the crystal habit of ice grown in their presence. Each of four antifreezes investigated caused ice to grow in long needles whose axes were parallel to the ice c axis. Together these results indicate the antifreezes adsorb to ice surfaces and inhibit their growth. A model in which adsorbed antifreezes raise the curvature of growth steps on the ice surface is proposed to account for the observed depression of the temperature at which freezing occurs and agrees well with experimental observations. The model is similar to one previously proposed for other cases of crystal growth inhibition. (Auth.)

B-20035

Horner, R.A., **History and recent advances in the study of ice biota,** Polar oceans. Proceedings of the Polar Oceans Conference, Montreal, May 1974. Edited by M.J. Dunbar, Montreal, Arctic Institute of North America, 1977, p.269-283, Refs. p.278-281. Includes discussion.

Diatoms were first described from sea ice in the 1840's by Ehrenberg in the Arctic and Hooker in the Antarctic. Early investigations consisted of lists of the diatom species found; experimental studies did not begin until the 1960's. In both polar regions, the bottom ice algal bloom is apparently triggered by low light intensities in the spring, with maximum production occurring in late spring. Production over the short time span of the ice algal bloom is high, but the role of the ice algae in the total productivity of the polar regions is still not known. (Auth.)

B-20036

Buĭnitskiĭ, V.Kh., **Organic life in sea ice,** Polar oceans. Proceedings of the Polar Oceans Conference, Montreal, May 1974. Edited by M.J. Dunbar, Montreal, Arctic Institute of North America, 1977, p.301-306, 8 refs.

Studies on ice biota in the Antarctic have shown that 1) ice containing algae may be reduced in mechanical strength by as much as one half, compared with alga-free ice; (2) the algal cells are for the most part alive and reproducing; (3) the number of cells per unit volume of sea ice exceeds the number found in water beneath the ice by factors of tens or hundreds; (4) the algae are found throughout the period of ice cover and (5) the numbers of cells in the inner layers of the ice are often greater than the numbers in the lower surface layer of newly formed ice. The conclusion is that sea ice is a highly favorable environment for life, more so than sea water; and it is suggested that the reasons for this are the high nutrient content of the brine pockets, the quasi-crystalline state of the brine, and possibly the biological properties of "water II". (Auth.)

B-20037

Hoshiai, T., **Seasonal change of ice communities in the sea ice near Syowa Station, Antarctica,** Polar oceans. Proceedings of the Polar Oceans Conference, Montreal, May 1974. Edited by M.J. Dunbar, Montreal, Arctic Institute of North America, 1977, p.307-317, 19 refs.

Near Showa Station micro-organisms proliferated in the brine pockets of the bottom layer of the sea ice in Mar. and early Apr. and also between Oct. and Dec. 1967 and 1970. Prominent constituents of the autumnal community were *Nitzschia* species, *Fragilariopsis* species and unidentified flagellates, which formed a brown layer at about 30 cm below the surface. Chlorophyll-a concentration in the brown layer reached 829 mg/cu m in Apr. Some of the algal cells of the autumnal community moved downwards and were contained within the sea ice which grew in winter. In addition to the above species, *Peridinium* species appeared in the bottom layer in Aug., where chlorophyll-a was 0.19 mg/cu m. Successively, *Amphiprora, Stephanopyxis, Nitzschia* species and *Navicula* began to increase, and the other brown layer was formed at the bottom of the sea ice of about 130 cm in thickness between Oct. and Dec. Small flagellates also occurred in the center of the sea ice in Dec. Chlorophyll-a contents of the brown layer exceeded 1000 mg/cu m in Dec. Observations have shown that the algae of the upper brown layer are the products of the autumnal burst of algae; and those of the lower layer are the products of the spring outburst, in a pattern similar to the bimodal seasonal proliferation of algae in the sea water. (Auth.)

B-20038

Margalef, R., **Ecosystem diversity differences: poles and tropics,** Polar oceans. Proceedings of the Polar Oceans Conference, Montreal, May 1974. Edited by M.J. Dunbar, Montreal, Arctic Institute of North America, 1977, p.367-376, 24 refs. Includes discussion.

Diversity expresses how a set of elements (usually individuals in a sample) fall in different subsets (species). It reflects the distribution of the long-term equilibrium ratios between every pair of species. A statistical trend towards some uniform asymptotic value of diversity could be expected, but actually diversity depends on the dynamics of populations, on the "grain" of the environment and on the number and independence of environmental inputs not internalized by the ecosystem. An environment uniform in space and with strong seasonal change is the result of dependence on a few correlated key factors, and leads to high production/biomass ratios, strong and spatially extended interaction between species, high success of r-strategists and low diversity. In polar ecosystems, diverstiy is usually low and diversity spectra of "rectangular" shape. Thermodynamic considerations anticipate an inverse correlation between temperature and diversity. Poles and tropics differ in diversity because the effect of range and unpredictability of change overrules potential effects of different average temperatures. (Auth.)

B-20040

George, R.Y., **Dissimilar and similar trends in antarctic and arctic marine benthos,** Polar oceans. Proceedings of the Polar Oceans Conference, Montreal, May 1974. Edited by M.J. Dunbar, Montreal, Arctic Institute of North America, 1977, p.391-408, Refs. p.404-407. Includes discussion.

A synthesis of data hitherto obtained on benthic ecology of the two polar regions reveals both similar and dissimilar trends. Arctic Shelf benthos off Point Barrow differs strikingly from Antarctic Shelf benthos in McMurdo Sound in physiological adaptation, metabolic patterns and in their innate responses to stress conditions imposed by thermal change. Long-term experiments on feeding rates, moulting, growth, acclimation trends and energy flow in isopod and amphipod populations, brought from Arctic Shelf and abyssal depths, provide new information on these cold-adapted benthic crustaceans. Basically, this report summarizes "similar trends" in polar benthos with emphasis on: 1) ice effects and under-ice fauna, 2) density dominance of species of specific ecological role, 3) low diversity of certain groups such as decapods, 4) polar phenomena of emergence of abyssal genera and submergence of shallow genera, 5) growth and reproduction. Amongst "dissimilar trends" between Arctic and Antarctic marine benthos, focus is essentially made on: biomass; diversity; oligomixity; endemism; consequence of climatic history of marine environment; thermal tolerance, metabolic adaptation. (Auth.)

B-20041

DeVries, A.L., **Physiology of cold adaptation in polar marine poikilotherms,** Polar oceans. Proceedings of the Polar Oceans Conference, Montreal, May 1974. Edited by M.J. Dunbar, Montreal, Arctic Institute of North America, 1977, p.409-422, 22 refs. Includes discussion.

Poikilotherms inhabiting the Arctic and Antarctic Oceans experience thermal environments (-1.8C and ice) during the winter, but not during the summer. In the arctic and subarctic regions there is still an abundance of ice during the summer, but water temperatures rise several degrees above freezing. In the Antarctic water temperatures remain near freezing, and ice is abundant even during the warmest summer months. Important physiological and biochemical differences can be correlated with these different thermal regimes. Antarctic forms tend to be much more stenothermal than the northern forms, and upper lethal temperatures above 10C have not been described. Upper and lower lethal temperatures cannot be raised or lowered by warm or cold acclimation as can be done in the northern forms. Comparisons of the levels of freezing resistance in antarctic and arctic fishes also show seasonal differences. Antarctic fishes retain high levels of an organic antifreeze regardless of temperature, whereas Arctic fishes produce an antifreeze only during the cold winter season. (Auth.)

B-20042

Knox, G.A., Lowry, J.K., **Comparison between the benthos of the Southern Ocean and the North Polar Ocean with special reference to the amphipoda and the polychaeta,** Polar oceans. Proceedings of the Polar Oceans Conference, Montreal, May 1974. Edited by M.J. Dunbar, Montreal, Arctic Institute of North America, 1977, p.432-462, Refs. p.455-462. Includes discussion.

A brief comparison is made between the Antarctic and the Arctic Oceans covering seasonal distribution of ice, submarine topography, sediments, water masses and circulation, nutrients and primary productivity. Some general comparisons are made between the shelf benthos of the Antarctic and the Arctic covering biomass distribution, zonation patterns in the shallow sublittoral, community composition and faunal diversity. Two comparable shallow water seas, Arthur Harbor on the Antarctic Peninsula and the eastern Arctic of North

America, are compared in detail from the viewpoint of faunal diversity. Two groups of animals, the Amphipoda and the Polychaeta, have been selected for a detailed biogeographical analysis of their distribution. From this analysis a biogeographic synthesis of Antarctic Shelf benthos is attempted and comparisons are made with the biogeographic patterns found on the Arctic Shelf. (Auth.)

B-20043

El-Sayed, S.Z., Turner, J.T., **Productivity of the antarctic and tropical/subtropical regions: a comparative study,** Polar oceans. Proceedings of the Polar Oceans Conference, Montreal, May 1974. Edited by M.J. Dunbar, Montreal, Arctic Institute of North America, 1977, p.463-503, Refs. p.497-501. Includes discussion.

The doctrine regarding the proverbial richness of the Antarctic waters and the poverty-stricken tropical/subtropical regions, which seems to be firmly in the textbooks, is being re-examined in light of the data obtained in recent years. In the course of an investigation of the biological productivity of the Southern Ocean (1962-1972), and the Gulf of Mexico (1964-1974), Texas A & M investigators studied the geographical, seasonal and year-to-year variations in the primary productivity, standing crop of phytoplankton, and the physical/-chemical factors which govern the productivity of these waters. The present study examines the basic similarities and differences in the productivity parameters of these two widely different marine ecosystems, based on three cruises made in the Southern Ocean and four cruises in the Gulf of Mexico. Observations in the Gulf of Mexico suggest that we have, hitherto, underestimated the productivity of the tropical/subtropical waters. Equally, our not-so-high productivity data of the waters surrounding Antarctica should force us to re-evaluate the legacy we have inherited regarding the proverbial richness of these waters. (Auth.)

B-20044

Vranckx, R., Hureau, J.C., **Production of lobsters in the waters of Saint Paul and Amsterdam Islands** [Production de langoustes dans les eaux des îles Saint-Paul et Amsterdam], Polar oceans. Proceedings of the Polar Oceans Conference, Montreal, May 1974. Edited by M.J. Dunbar, Montreal, Arctic Institute of North America, 1977, p.531-548, In French with English summary. 19 refs. Includes discussion.

Variation in the qualitative and quantitative data is strongly influenced both by the fishing technique and by the biology of the organism. Inshore and offshore stocks of lobster are distinguished on the basis of morphological and biometric characters. The decline in the stock is demonstrated by comparison of the annual mean size, variation in the relative frequencies of the different size groups in the catch, the decline in the catch per unit effort and by changes, from one fishing expedition to another, in the index of diversity calculated as a function of the size groups. A first approximation of the mean biomass per unit of sea surface is given, together with an estimate of the maximum possible catch after the stock has returned to equilibrium. (Auth.)

B-20053

Johnstone, G.W., Kerry, K.R., **Ornithological observations in the Australian sector of the Southern Ocean,** International Ornithological Congress, 16th, Canberra, 1974. Proceedings, Canberra, Australian Academy of Science, 1976, p.725-738, 17 refs.

DLC QL671.I7 1974

Records kept by ANARE of pelagic bird sightings on voyages in the Southern Ocean over the last 27 years are analyzed. The study area is bounded by latitudes 32S and 70S and longitudes 58E and 162E. For each of the most common birds a grid with divisions of 2 deg latitude and 4 deg longitude is given, showing in which sections the species has been seen. The results are discussed, and the inclination of the birds to follow or accompany ships is commented upon.

B-20054

Udvardy, M.D.F., **Did Santa Rosalia like sea-birds,** International Ornithological Congress, 16th, Canberra, 1974. Proceedings, Canberra, Australian Academy of Science, 1976, p.739-746, 20 refs.

DLC QL671.I7 1974

The author is concerned with the distribution, speciation and diversification of birds at sea. He divides the Southern Ocean into three sectors and indicates the number of species found nesting in each that are Panantarctic, common to two of the three, and endemic. The size of coastal seabird faunas is tabulated.

B-20056

Fain, A., **Mites collected by J. Travé in the subantarctic islands, 2. Families Acaridae, Anoetidae, Ereynetidae, and Tarsonemidae (Astigmata and Prostigmata)** [Acariens récoltés par le Dr. J. Travé aux Iles Subantarctiques 2. Familles Acaridae, Anoetidae, Ereynetidae et Tarsonemidae (Astigmates et Prostigmates)], *Acarologia.* Dec. 1976 18(2), p.302-308, In French with English summary. Refs. p.327-328.

The present paper is devoted to four of the families represented by J. Travé's mite collection from the subantarctic islands. The material contains 10 species, belonging to 9 genera. Among these taxa 7 species, 2 subspecies and 2 general are new and described. The other taxa are recorded for the first time from these islands. (Auth.)

B-20075

Rounsevell, D.E., **Geographic variation in the size of an antarctic mite *Tydeus erebus* Strandtmann (Acarina:Prostigmata),** *Acarologia.* Mar. 1978 19(2), p.209-219, 10 refs.

A collection of *Tydeus erebus* Strandtmann from widespread localities in East Antarctica is reported. The mean body lengths of adult specimens from some of these localities differ significantly from those at other localities and vary with the type of habitat. Geographic variation in size of the magnitude reported here has not been found in other species of Antarctic mites, and possible causes are discussed. Other morphological variation between the specimens is described and brief notes on the behavior and reproduction of *T. erebus* at the Vestfold Hills are presented. Three paratypes of *Tydeus wilkes* Strandtmann are compared with specimens of *T. erebus* Strandtmann and are considered to belong to the latter species. (Auth.)

B-20086

Ito, T., Fukuchi, M., ***Harpacticus furcatus* Lang from the Antarctic Peninsula, with reference to the Copepodid stages (Copepoda: Harpacticoida),** *Antarctic record.* Mar. 1978 No.61, p.40-64, 12 refs.

Harpacticus furcatus Lang is redescribed, based upon some specimens collected in a tidal pool near Brown Station on the west coast of the Antarctic Peninsula. Although the original description by Lang states that the female has only one inner seta on the middle endopodite segment of leg 2, all the females of the present material examined have two setae, and markedly differ from Lang's description in this respect. All of the nine female specimens of the remaining Lang material, however, have two inner setae on the endopodite segment in question, and completely agree with those of the present material in this important taxonomic characteristic. All the copepo-

did stages are also described and illustrated. As a result, it is clarified that this species is of the non-retarded formation type in the differentiation process of the endopodal outer spine of leg 2, leg 3 and leg 4. (Auth.)

B-20093

Kawamura, A., **On the food of Bryde's whales caught in the South Pacific and Indian Oceans,** *Whales Research Institute. Scientific report,* Dec. 1977 No.29, p.49-58, 17 refs.

A total of 225 Bryde's whales was caught in the Coral Sea, South Pacific and southwestern Indian Oceans during the 1976/77 season under the scheme of special permission, and their stomach contents along with feeding conditions in terms of the state of repletion were examined. In the South Pacific regions 75% of the animals were found to be replete with food to varying degrees, as opposed to only 46.7% in the temperate Indian Ocean. The occurrence of fully repleted animal during the daytime suggests that there seems to exist a considerable availability of whales' food even in the pelagic waters over the tropics. The stomach contents were solely comprised of three species of euphausiids: *Euphausia diomedeae, Euphausia recurva* and *Thysanoessa gregaria.* There were found to exist possible differences in the fashion of geographical distribution among those euphausiid species as whales' food. Both *E. diomedeae* and *E. recurva* occurred dominantly over the whaling regions in question with monospecific or mingled composition, whereas *Th. gregaria* alone was completely absent from the Indian Ocean animals. (Auth.)

B-20094

Nemoto, T., Brownell, R.L., Jr., Ishimaru, T., ***Cocconeis* diatom on the skin of Franciscana,** *Whales Research Institute. Scientific report,* Dec. 1977 No.29, p.101-105, 9 refs.

Two species of diatoms are described from the skin films of Franciscana caught in the adjacent waters to Uruguay. *Cocconeis ceticola* is common diatom on skin films, and one other naviculoid species is also found on this dolphin. It is noted that many diatoms have been reported from skin films of larger baleen and sperm whales in the Antarctic as well as the moderate sized bottle-nose and killer whales. Diatom films have also been reported on dolphins at South Georgia.

B-20096

Lindsay, D.C., **Two new lichens from Marion Island, southern Indian Ocean,** *Nova Hedwigia. Zeitschrift für Kryptogamenkunde,* 1976 Vol.27, p.877-880, 8 refs.

Catillaria impolita sp. nov. and *Microglaena austrocinerascens* sp. nov. are described from Marion Island. The lichen flora of Marion Island is little known. Five species were listed from the collections of the Challenger Expedition by Crombie (1877) and odd records have appeared in the literature since. In 1965-66 and 1971-72, biological expeditions were organized to investigate the ecosystems of Marion Island (van Zinderen Bakker et al., 1971; van Zinderen Bakker, 1973), during which lichens were collected. In these collections two species were found which could not be placed in previously known taxa; hence they are described as new. (Auth.)

B-20097

Lindsay, D.C., **Lichens of Marion and Prince Edward Islands, southern Indian Ocean,** *Nova Hedwigia. Zeitschrift für Kryptogamenkunde,* 1976 Vol.28, p.667-689, 35 refs.

An account of the lichen flora and vegetation of the subantarctic Prince Edward Island group is given for the first time. Twenty genera and 45 species are listed, and a preliminary analysis indicates strong affinities with the flora of subantarctic Archipel de Kerguelen as well as the presence of a strong bipolar element. Lichens, especially macrolichens, appear to be very local in their distribution on the island and lichen-dominated communities only occur in the most harsh environments. (Auth.)

B-20101

Fleming, C.A., **Bivalve mollusc genus *Limatula:* a list of described species and a review of living and fossil species in the southwest Pacific,** *Royal Society of New Zealand. Journal,* Mar. 1978 8(1), p.17-91, Refs. p.86-91.

About 150 named fossil and living species of Limidae grouped in the genus *Limatula* Searles Wood are listed. They range from Jurassic (perhaps Triassic) to Recent and are now distributed in all oceans and seas from the Arctic to the Antarctic. The genus has not previously been subdivided, but its phylogenetic and biogeographic history can only be approached by recognizing a number of species-groups, some of which are formally proposed as subgenera, using characters of shell shape and ornament that appear to be conservative. Four subgenera are recognized (two new) for 40 living and fossil species-group taxa from Australia and adjacent parts of the Pacific and Southern Ocean: *Limatula* s. str. (with several groups), *Limatuletta* nov. (type: L. *japonica* Adams), *Stabilima* Iredale (3 species groups) and *Squamilima* nov. (type: *Lima hodgsoni* E. A. Smith). The proposed new species and subspecies are listed. Most of the subgenera and species groups are represented by widely dispersed species in distant parts of the world or in different parts of the geological record, but some are now characteristic of the Southern Ocean or of the Indo-Pacific Realm; and others seem to occupy disjunct ranges. Some of the species groups of *Limatula*, despite its Mesozoic origins and conservative morphology, have apparently been widely distributed throughout the world and have speciated or subspeciated quite late in geological time.

B-20102

Bé, A.W.H., Hutson, W.H., **Ecology of planktonic foraminifera and biogeographic patterns of life and fossil assemblages in the Indian Ocean,** *Micropaleontology,* Oct. 1977 23(4), p.369-414, Refs. p.406-414.

The relative abundance and distribution patterns of 32 species, including antarctic and subantarctic species, in Indian Ocean waters and surface sediments have been determined from 154 plankton tows and 190 core-tops. Principal components analysis groups the populations into nine life assemblages and five fossil assemblages. A quantitative comparison between the life and fossil assemblages is then possible by algebraically relating the factor assemblages. The model shows, for example, how proportions of four discrete tropical and subtropical life assemblages contribute in producing a single tropical-subtropical fossil assemblage. According to this model, differential productivity, selective solution, and biotic mixing do not mark the primary distribution patterns of the living species.

B-20132

Whale controversy: United States vs. Japan, *Marine Technology Society. Journal,* Mar. 1974 8(3), p.3-14.

Statements are presented from a variety of viewpoints on the whale issue. The Japanese position is that whale meat is a major source of protein for the Japanese people and that they fully realize the importance of maintaining and increasing whale stocks. Japan and the Soviet Union have refused to comply with conservation decisions taken by the International Whaling Commission. The U.S. on the other hand has called for a complete moratorium on the commercial fishing of whales. Canada and the U.K. as well as a number of conservationists support the U.S. view, and the leaders of a number of national conservation organizations have proposed a boycott of Japanese products in the U.S. Still another viewpoint considers the moratorium concept to be idealistic and utopian. Since only the fin whale is certainly overharvested, substantially so in the Antarctic, a moratorium on those stocks might be prudent, but the evidence does not appear to support the view that a moratorium on fin whales is mandatory from the standpoint of rational use of the resource. It is

suggested that whales are not endangered and that in the past 10 yr the International Whaling Commission has successfully brought about a virtual halt to the over-kill of whale stocks. Ensuring a future for the whale population calls for logic, dialogue, and willingness to make reasonable management decisions based upon the interests of all.

B-20139

Makarov, R.R., **Distribution of the larvae and some questions of the ecology of reproduction of the Euphausiid *Euphausia frigida* Hasen, 1911 (Crustacea: Euphausiacea) in the southern part of the Scotia Sea,** *Oceanology*, Oct. 1977 17(2), p.208-213, 26 refs. Translated from Okeanologiia.

The general distribution of the larvae of *Euphausia frigida* shows that spawning of the euphausiid occurs throughout the area investigated, but is most intense in the region of the zone of mixing of waters of the Weddell Sea and West Wind Drift, where the numbers of larvae of nauplius stages were maximal. Larvae of all stages were encountered in waters of the West Wind Drift, while in Weddell Sea the principal mass of larvae had in development reached only the calyptopis I stage, which indicates the later onset of the spawning season in the Weddell Sea. Nauplius and metanauplius larvae were encountered in the 200- to 1000-m layer (maximal numbers in the 500- to 1000-m layer), while larvae of the remaining stages were distributed throughout the 0-1000-m layer (in the 500- to 100-m layer they were very few, while the maximal numbers were in the 50- to 200-m layer). (Auth.)

B-20152

Allen, K.R., **Assessment of antarctic minke whale stocks,** International Commission on Whaling. Report and papers of the Scientific Committee of the Commission, 1975, London, 1976, p.235-246, 3 refs.

DLC SH381.I484

Three seasons' data on the hunting of minke whales in Antarctica are used as a basis for a preliminary assessment of the size of the stock and the effect of recent hunting. The principal data on catches and efforts are summarized in a table. Figures for Japanese and Soviet efforts are compared. Virtually all the figures show a declining trend. This could be a result of population decline or of the fact that the animals may have become wary or have otherwise changed their behavior.

B-20153

Ivashin, M.V., **On reproduction of the minke whale *(Balaenoptera acutorostrata* Lac. 1804) in the Indian Ocean sector of the Antarctic,** International Commission on Whaling. Report and papers of the Scientific Committee of the Commission, 1975, London, 1976, p.329-331, 7 refs. Summary of a paper to be published in Russian.

DLC SH381.I484

Observations on the female whales caught by the *Chiyo-Maru* during the 1973-74 Antarctic season indicate that the vast majority of mature females (up to 90-95%) take part in reproduction every season. Data on size of mature and immature females, embryos, weights, and percentages of barren cows are included.

B-20154

Ohsumi, S., **Attempt to standardize fishing efforts as applied to the stock assessment of the minke whale in the Antarctic Area IV,** International Commission on Whaling. Report and papers of the Scientific Committee of the Commission, 1975, London, 1976, p.404-408, 6 refs.

DLC SH381.I484

This paper attempts to incorporate some of the correction factors required to standardize the antarctic minke whale effort data for Japan. Corrections as made here are only partial and need much refinement. The rather sharp decline in the apparent catch per unit effort reflects chiefly decrease in the fishing efficiency and decreased availability of the stock, as well as unfavorable weather and a northward shift in the pack. Whale sighting data which did not show any drop supports the view that the apparent decrease is not the result of lower whale stocks.

B-20155

Broyer, C. de, **Revision of the genera *Ambasiopsis* K.H. Barnard and *Neoambasia* Dahl (Crustacea, Amphipoda)** [Révision des genres *Ambasiopsis* K.H. Barnard et *Neoambasia* Dahl (Crustacea, Amphipoda)], *Journal of natural history*, 1977 No.11, p.679-692, In French with English summary. 10 refs.

The antarctic species *Ambasiopsis georgiensis* K. H. Barnard, *A. uncinata* K. H. Barnard and *Neoambasia tumicornis* (Nicholls) are revised and their descriptions and figures completed. The genus *Neoambasia* Dahl, 1959, is synonymized with *Ambasiopsis* K. H. Barnard, 1931, for which a revised diagnosis is given. (Auth.)

B-20160

Block, W., **Effects of long-term storage on the oxygen uptake of *Cryptopygus antarcticus* (Collembola),** *Oikos*, 1977 29(2), p.284-289, 10 refs.

During storage of the collembolan *Cryptopygus antarcticus* Willem at +5C over 387 d, both respiration and metabolic rates of size class V and IV individuals declined significantly. For pooled data for adults of both size classes this decline was calculated. No differences were detected between the sexes, but a significant difference in metabolism existed between fresh animals measured at the start of the storage experiment and earlier in the austral summer at Signy Island. The respiration and metabolic rates of the stored individuals were similar to those from earlier measurements made in the UK on individuals which had been subjected to similar treatment. It is suggested that the metabolic decline is an adaptation to constant temperature unrelated to the nutritional conditions. Short- and long-term metabolic adaptation is discussed in relation to studies on mites, nematodes and other invertebrates. (Auth.)

B-20163

Wouts, W.M., **Campbellenchinae (Nematoda: Tylodoridae), a new subfamily from Campbell Island, with a description of two new species,** *New Zealand journal of zoology*, Aug. 1977 4(3), p.213-216, 3 refs.

Specimens of an undescribed subfamily of Tylodoridae Paramonov, 1967, were found in each of 50 soil samples collected since 1951 from around the roots of native plants on Campbell Island, New Zealand. This taxon, Campbellenchinae n. subfam., its type-genus, *Campbellenchus* n. gen., and 2 new species, *C. poae* and *C. Filicauda*, are described. The diagnostic characters of the new subfamily include a lip region without a labial disc, a stylet of moderate length, a characteristic zone of cuticular annulation anterior to the stylet knobs, a slit-like amphidial opening, a single ovary, and a filiform tail. (Auth.)

B-20165

Smith, V.R., **Animal-plant-soil nutrient relationships on Marion Island (Subantarctic),** *Oecologia*, 1978 32(2), p.239-253, Refs. p.252-253.

Manuring by the many seals and seabirds forms the major source of N and P to the Marion Island terrestrial ecosystem, and plants at manured sites exhibit enhanced vitality and increased N and P contents in their leaf tissue and saps. A similar effect results from small applications of NPK fertilizer. Non-manured soils possess very low levels of available N but substantial quantities of organic N. (Auth.)

B-20200
Llano, G.A., **Polar research: a synthesis with special reference to biology,** Polar research: to the present, and the future, edited by M.A. McWhinnie, Boulder, Colo., Westview Press, 1978, p.27-61, Refs. p.58-61.

The background, development, and present status of the biological sciences in arctic and antarctic regions are examined. The U.S. antarctic program goals have been directed toward: obtaining fundamental knowledge about antarctic life forms and life systems, increasing our understanding of the environmental dynamics of the Antarctic relative to the rest of the world, and strengthening U.S. competence in polar life sciences by utilizing antarctic expeditionary research for the development of scientific careers. Tabular data illustrate the physical differences between the two poles, a comparison of some bird groups in the two regions, the historical evolution of U.S. antarctic biology from the early 1800's to the present, a synthesis of antarctic biology and medicine over the past 19 yr., the advantages of biological research in Antarctica, and the families and species of polar marine fishes. U.S. concern in problems related to the exploitation and conservation of antarctic living resources is stressed. Noteworthy examples of biological research conducted under the U.S. Antarctic Research Program are outlined.

B-20204
El-Sayed, S.Z., **Primary productivity and estimates of potential yields of the Southern Ocean,** Polar research: to the present, and the future, edited by M.A. McWhinnie, Boulder, Colo., Westview Press, 1978, p.141-160, 34 refs.

Data on the distribution and magnitude of the phytoplankton standing crop and phytoplankton production in the Southern Ocean are reviewed, and the factions of annual primary production required to support krill, fish, bird and mammalian populations are estimated. The results indicate that there is much greater variability in the productivity parameters studied than had been previously thought and that the productivity of the Southern Ocean as a whole, perhaps, is not as high as originally believed. Analysis of the estimated data suggests that the system is capable of supporting as it once did, large catches of baleen whales and fur seals.

B-20205
Siniff, D.B., Stirling, I., Eberhardt, L.L., **Problems in the conservation of polar marine mammals,** Polar research: to the present, and the future, edited by M.A. McWhinnie, Boulder, Colo., Westview Press, 1978, p.161-174, 27 refs.

This paper is concerned with problems in research and management of marine mammals in polar regions. Among the issues to be considered in management plans are the economics of exploitation, the impact of economic development and tourism on ecosystems, and conflicts between fisheries and marine mammal populations. For example, considerable caution is needed to assess possible changes in competitive interactions among mammal species using krill as a food base. Relative to research on populations, there is a need for adequate surveys of population abundance, studies for analyses of population dynamics, and the determination of the regulatory processes which play important roles in marine mammal populations. Several models are explored for application to the regulation of marine mammal populations. Present day ecosystem models generally deal with the kinetics of an ecosystem or with the dynamics of a specific population. It is suggested that modeling of polar marine ecosystems should proceed initially through a series of species-specific and site-specific process models with maximum utilization of field studies and experimentation to update the modeling processes. It is further suggested that questions of aesthetic and recreational values need discussion and understanding if they are to be seriously considered in management decisions.

B-20206
DeVries, A.L., **Physiology and biochemistry of low temperature adaptations in polar marine ectotherms,** Polar research: to the present, and the future, edited by M.A. McWhinnie, Boulder, Colo., Westview Press, 1978, p.175-202, Refs. p.198-202.

Following a comparison of the arctic and antarctic marine environments, resistance adaptations, freezing avoidance mechanisms, seasonal patterns of freezing avoidance, cold adaptation, and the effect of warm acclimation on metabolic compensation in invertebrate and fish fauna are discussed. Antarctic fish are some of the most stenothermal organisms in the animal world. Body temperatures of marine ectotherms are essentially the same as that of the surrounding environment. For the invertebrates, danger from freezing exists only in special circumstances, such as entrapment in the ice of McMurdo Sound. The antifreezes in polar fish act in a non-colligative manner by lowering the freezing point without affecting the melting point. In antarctic nototheniids the antifreezes are glycopeptides, while in northern fish they are glycopeptides in some species and peptides in others. The structures of these compounds are illustrated and discussed. The levels of antifreeze in the fish of McMurdo Sound appear to be genetically fixed and cannot be modulated by thermal change. Polar fish possess a high degree of metabolic cold adaptation which most surely involves changes at the enzymatic level. It appears that lipids are the primary energy source in antarctic fish; they also play a role in buoyancy. Antarctic fish do not show metabolic compensation upon warm acclimation. The fact that these forms cannot live at elevated temperatures implies that their physiology and biochemistry differ markedly from that of temperate forms which survive low temperatures in winter and high temperatures in summer.

B-20207
Parker, B.C., **Terrestrial adaptations in polar regions,** Polar research: to the present, and the future, edited by M.A. McWhinnie, Boulder, Colo., Westview Press, 1978, p.203-229, Refs. p.218-229.

This paper presents 1) a non-comprehensive review of the terrestrial and aquatic (non-marine) biota of arctic and antarctic regions, 2) investigations conducted toward identifying and understanding adaptations of these biota, and 3) the trends in research which should lead to future directions in this area of polar biology. A select supplemental bibliography is also included.

B-20216
Baker, A.N., **Spectacled porpoise, *Phocoena dioptrica* new to the subantarctic Pacific Ocean,** *New Zealand journal of marine and freshwater research*, June 1977 11(2), p.401-406, 9 refs.

A cranium of *Phocoena dioptrica* Lahille, 1912, collected at Enderby Island, Auckland Islands, represents the first discovery of the species in the Pacific Ocean, the ten previous records being all from the south-western Atlantic. The species may thus have a circumpolar distribution in subantarctic latitudes. A list of six small cetacean species now known from New Zealand's subantarctic region is appended. (Auth.)

B-20218
Rakusa-Suszczewski, S., Klekowski, R.Z., **Biology and respiration of the antarctic Amphipoda *Paramoera walkeri* Stebbing in the summer,** *Polskie archiwum hydrobiologii*, 1973 20(3), p.475-488, 31 refs.

The present studies were carried out in the antarctic station Molodezhnaya in the summer time (Dec., 1971-Mar., 1972). The sub-fast ice community in which *P. walkeri* is found during the winter undergoes destruction in summer, and the animals move down to the sea

bottom. In the investigated population of *P. walkeri* two generations were present— the younger one was in the intensive growth stage, the older one was dying out after breeding. Size distribution in the examined generations and interrelation between the length and weight of individuals have been analyzed. *P. walkeri* metabolism has been studied experimentally at every two degree gradient of temperatures ranging from -1.2C to 12.0C and 29 per mille salinity and also at 2.2C and 15 per mille salinity. Animals were acclimated to different temperatures. In summer the metabolic level was higher than in winter, and the increase in temperature increased the oxygen consumption only slightly in contrast to winter. A decrease in salinity caused an increase in oxygen consumption. (Auth.)

B-20219

Rakusa-Suszczewski, S., Dominas, H., **Chemical composition of the antarctic Amphipoda *Paramoera walkeri* Stebbing and chromatographic analysis of its lipids,** *Polskie archiwum hydrobiologii,* 1974 21(2), p.261-268, 17 refs.

Material for analysis was collected at the Soviet antarctic station Molodezhnaya in winter 1969 and summer 1972/1973. Lyophylized samples of *P. walkeri* have been analyzed to determine the ash, chitin, lipids, and protein content and also tested by burning in the microbomb calorimeter. Differences were found between the two generations of *P. walkeri* under examination. The observed variations in the components of each generation were slightly different, depending on feeding conditions in the environment and the reproduction period. The composition of lipids in *P. walkeri* was the same, regardless of differences in their age and the time of sample collection. (Auth.)

B-20220

Rakusa-Suszczewski, S., **Respiration and osmoregulation as the expression of the adaptation of the invertebrates and fishes to life under hypostenothermic conditions,** *Polskie archiwum hydrobiologii,* 1975 22(4), p.521-552, Refs. p.549-551.

This study is a review of research concerning respiration and osmoregulation in invertebrates and fishes living in antarctic waters, at temperatures below the freezing point and at minimal fluctuations. This environment is defined as hypostenothermic. It has been found that the reaction of the animal respiration to the rise of temperature depends on the level of metabolism. The range of the animal activity is the highest at the lowest temperature. There is a lack of the temperature independence zone in the respiration of the animals. The invertebrates and the fishes show a great similarity in the respiration reaction to a rise of temperature. The fish tissues show varied levels of the intensity of respiration and metabolic changes, and temperatures higher than in the environment disturb their mutual equilibrium. The osmoconcentration of the invertebrates' blood is the highest of all the recorded ones, and it is hyperosmotic in a similar way as in the fishes, though in the latter the concentration remains hyperosmotic in relation to the sea-water of normal salinity. The specific features of the discussed biological processes may serve as a basis for differentiation of the examined organisms into a separate group called "hypostenothermal". (Auth.)

B-20221

U.S. Department of State, **Final environmental impact statement on the negotiation of a regime for conservation of antarctic marine living resources,** June 1978, 73p. + appendices, 43 refs.

It has been proposed that an international agreement be negotiated to conserve all antarctic marine living resources south of the Antarctic Convergence, except whales and seals which are presently regulated by conservation conventions. Commercial harvesting will result in the increasing removal of fish and krill from antarctic waters, and may include squid, birds and seals. Populations of organisms which feed on krill and are themselves potentially harvestable resources will also be reduced. Further adverse environmental affects are anticipated from increased shipping traffic, local pollution from factory facilities, and increased disturbance of the ecosystem by human activity. It is concluded that a total ban on harvesting cannot be negotiated or enforced. Therefore, the establishement of a conservation regime with provisions for determining and enforcing conservation measures, before vested economic interests become established, is the best means of ensuring the long term productivity of the renewable resources in the antarctic marine ecosystem. This report contains 10 appendices comprised of the following documents: 4 reports of meetings focusing on antarctic marine resources, 4 technical reports on living marine resources (see items, B-18981, B-20001, and B-20222), comments on the draft environmental impact statement by federal agencies, private organizations and individuals, and Department of State responses to the comments.

B-20222

Green, K.A., **Role of krill in the antarctic marine ecosystem,** U.S. Department of State. Final environmental impact statement on the negotiation of a regime for conservation of antarctic marine living resources. Appendix E, Dec. 1977, 34p., 46 refs.

The antarctic marine ecosystem is defined biologically by the distribution of krill, some phytoplankton, penguins, fish, and seals which are circumpolar but restricted south of the Convergence. The biology of the ecosystem is strongly affected by the following physical features: circumpolar upwelling and input of nutrients, transport by the Circumpolar Current, low temperature, fluctuating areas of pack ice, and the polar light regime. Krill is the dominant herbivore. Its ecological role is unique since it provides the major food resource for fish, squid, birds, crabeater seals and baleen whales. Krill population estimates, inferred from the estimated predation on krill by fish, squid, birds, and mammals, amount to approx 330,000,000 tons per yr. Because krill has a central place in the antarctic marine food web, excessive harvesting would be very damaging to the entire ecosystem. Krill harvest considerations and management and conservation concerns are outlined.

B-20223

Bengtson, J.L., **Review of information regarding the conservation of living resources of the antarctic marine ecosystem,** Washington, U.S. Marine Mammal Commission, July 1978, 148p., Refs. p.116-148.

The need for a regime to conserve antarctic marine living resources is apparent. This paper summarizes certain features of the antarctic marine ecosystem, comments on the possible effect of a krill harvest, and discusses the need for an ecosystem approach to managing antarctic marine living resources. Throughout the paper, the term "living resources" refers to all living marine organisms, including seabirds, which are an integral part of the structure and function of the ecosystem. The report is divided into the following sections: physical attributes of the antarctic marine ecosystem; major faunal groups present; history of exploitation (whaling and sealing); summary of available data on major animal groups (whales, seals, birds, fish and cephalopods); ecosystem aspects of the system; and effects of ecosystem manipulation of living resources.

B-20231

Mironov, A.N., **Deep-sea urchins of the northern Pacific Ocean** [Glubokovodnye morskie ezhi severnoĭ chasti Tikhogo okeana], *Akademiia nauk SSSR. Institut okeanologii. Trudy,* 1976 Vol.99, p.140-161, In Russian with English summary. Refs. p.160-161.

Eleven species of the deep-sea urchins are studied. One species and 2 subspecies are new to science. Material has been collected during expeditions of the research vessels in the Northern Pacific. Fauna of the deep-sea urchins of the Northern Pacific consists of three groups of species: 1) the species penetrated here from the west tropical regions of the Indo-Pacific; 2) the species penetrated here from the Antarctic and East Pacific regions; 3) the endemic species and subspecies derived from the second group. Figures showing the world distribution of all the species under consideration are given. (Auth. mod.)

B-20237

Sagar, P.M., **Breeding of antarctic terns at the Snares Islands, New Zealand,** *Notornis.* Mar. 1978 25(1), p.59-70, 23 refs.

The breeding and habits of the Antarctic Tern were studied during a summer at the Snares Islands. Daily records were kept of ten nests situated on cliff ledges and rocks. Egg-laying occurred during two periods: late Oct., early Nov. and late Nov. The usual clutch was one egg, but some two-egg clutches were laid. Re-laying probably occurred on one occasion when the first clutch was lost. Both parents incubated, and the incubation period averaged 24 days. The chicks were guarded for two to three days after hatching and were fed by both parents. Chicks fledged between 27 and 32 days after hatching. Adverse weather severely restricted chick growth during the early stages of development and was a major factor in chick mortality. (Auth.)

B-20239

Hoshino, T., **Two new fossil demosponges from West Ongul Island, Lützow-Holm Bay, Antarctica,** *Seto Marine Biological Laboratory. Publication.* Nov. 1977 24(1/3), p.43-48, 7 refs.

Two fossil sponges were found on the northern side of West Ongul Island at elevations of 5-7.5 m above sea level. Though they are fossil in a limited sense, the writer considers it appropriate to treat them as present-day animals for the purpose of classification of the class Demospongia. Both are new species: *Halichondria longioxea* n. sp. and *Axociella ongulensis* n. sp.

B-20242

Edds, P., Brownell, R.L., Jr., **Bibliography of antarctic krill,** Washington, D.C., Smithsonian Oceanographic Sorting Center, Sep. 1977, 42p.

This bibliography contains references to monographs, books, technical reports, and journal articles in English, Japanese and a number of European languages.

B-20262

Stadler, T., **Parasitology, the key to a problem** [Parasitología: Clave para un problema], *Antártida,* June 1975 No.6, p.48-49, In Spanish.

Basing his discussion on Szidat's and Fahrenholz's laws of parasitology, the author points out how the study of parasites, such as *Diplostomum* spp. in antarctic fish can help resolve biogeographic and phylogenetic questions.

B-20264

Tomo, A.P., **Birds that fly** [Aves voladoras], *Antártida,* June 1975 No.6, p.57-59, In Spanish.

The appearance, habits, biology, and distribution of *Chionis alba, Catharacta skua, C. maccormicki, Sterna* spp., and *Larus dominicanus* are briefly reviewed.

B-20273

Holdgate, M.W., **Terrestrial ecosystems in the Antarctic,** *Royal Society of London. Philosophical transactions,* May 26, 1977 279B(963), p.5-25, Refs. p.23-25.

Detailed research at Signy Island has provided information concerning the biomass and productivity of certain vegetation types, decomposer organisms, microbivores, and invertebrate herbivores and predators. The main pathways of energy and nutrient within the terrestrial study sites can be regarded as reasonably established. Net annual production locally reaches very high levels. Only a tiny part of this productivity is consumed by herbivores, the greater part passing to the decomposers or persisting as peat. Most of the animals are microbivores, or graze on fungi, and in turn sustain the small number of invertebrate predators. Signy Island is a reasonably representative sample of the maritime Antarctic zone in the Antarctic Peninsula region where conditions are particularly favorable for terrestrial life. Its ecological features resemble most closely those of the South Shetland Islands (except over permeable volcanic rocks) and the Palmer Archipelago on the western side of the Antarctic Peninsula. Very different plant and animal communities occur over much of the McMurdo Sound region and in the inland ranges of East Antarctica. There is a clearly marked attenuation of the vegetation and fauna and simplification of the ecological systems as one moves towards cold, arid continental conditions. But the biota of the maritime Antarctic and the sub-Antarctic islands is more impoverished than ecological factors alone would indicate, because of the isolation of these land habitats, many of which have only recently been deglaciated. If present environmental conditions persist, a slow increase in the complexity of these ecological systems is to be expected and in some areas, especially the subantarctic islands, this process is being accelerated by human influence. (Auth. mod.)

B-20274

Fogg, G.E., **Aquatic primary production in the Antarctic,** *Royal Society of London. Philosophical transactions,* May 26, 1977 279B(963), p.27-38, Refs. p.36-38.

A review is presented of studies, including recent work by members of the British Antarctic Survey, on the primary productivity of plankton, ice-flora and benthos in both marine and freshwater habitats in the Antarctic. Those members of the flora so far studied have low compensation points enabling slow growth in low light intensities but otherwise show no apparent adaptation to temperatures around freezing point. Certain sea areas, mostly inshore, have dense standing crops with daily and annual productivities as high as those of productive areas elsewhere in the oceans but in the open Southern Ocean productivity seems generally low even although nutrient concentrations are high, probably because of excessive turbulence carrying plankton out of the photic zone. There is as yet insufficient data to show whether, as a whole, the photosynthetic efficiency of the Southern Ocean is greater or less than that of other sea areas. Antarctic algae liberate extracellular products of photosynthesis but there is no definite evidence that these are reassimilated to support growth when light intensities are low and it may be that this material, carried by currents, supports heterotrophic production in other parts of the ocean. Comparison of data for adjacent marine and freshwater systems shows that their rates of primary production are much the same but the marine phytoplankton shows characteristics of shade-adapted cells consistent with the greater turbulence to which it is exposed. (Auth.)

B-20275

Roberts, B.B., **Conservation in the Antarctic,** *Royal Society of London. Philosophical transactions,* May 26, 1977 279B(963), p.97-104, 26 refs.

Formidable legal and administrative complexities arise from conflicting claims to jurisdiction and the continued absence of generally recognized sovereignty over much of the region. Existing conservation measures fall into three groups: elaborate laws made by govern-

ments claiming Antarctic territories, more restricted laws, and simple instructions for particular expeditions. The Antarctic Treaty, 1959, made it possible to begin coordinating all these separate instruments. No claimed jurisdiction has been surrendered or recognized: each government has started to harmonize its own control measures with the 'Agreed Measures for the Conservation of Antarctic Fauna and Flora', 1964. This scheme applied only to land areas and has since been evolving in the light of experience. Although not yet formally approved by all the governments concerned, it is working effectively by voluntary agreement. Different approaches are necessary for conservation of Southern Ocean resources, especially krill. A start has been made with the 'Convention for the Conservation of Antarctic Seals', 1972. There are many outstanding problems: all require effective cooperation between scientific and legal advisers, diplomats and politicians. Mention is made of recent British conservation legislation for South Georgia, the Falkland Islands and the Tristan da Cunha group. Some of the next steps are outlined. (Auth.)

B-20276

Dunnet, G.M., **Place of the Antarctic in biological sciences,** *Royal Society of London. Philosophical transactions.* May 26, 1977 279B(963), p.105-112, 18 refs.

The Antarctic offers a number of special features and opportunities for biological science. The dominating marine ecosystem is rich in nutrients and biologically very productive. The relatively few species of plants and animals are highly adapted to the rigorous climatic conditions and to the extreme annual pattern of day length and light intensity. The terrestrial and freshwater communities are even more restricted in species composition and are adapted to an even more rigorous climate. The understanding of ecological processes and trophic relations in such systems is of fundamental importance, and is essential before technology is developed to exploit the vast biological resources of the Southern Ocean. Special environmental features of the Antarctic have led to the development of remarkable adaptations in plants and animals, and there is opportunity for detailed study at the levels of the life cycle, behavior, physiology and biochemistry. Further, with the recent developments in the understanding of plate tectonics, and the increasing acceptance of the concept of continental drift there is now an increasing need for knowledge about the biological history of this area. (Auth.)

B-20287

Jauch, H., **Research on krill** [Forschungen über Krill], *Naturwissenschaftliche Rundschau.* June 1978 31(6), p.244-247, In German. 4 refs.

Current knowledge on krill, its biological characteristics, population distribution and behavior, as well as techniques of detection, capture and processing, are discussed. In Germany, the Ministry of Research distributed 24 metric tons of deep-frozen krill to more than 50 food processing companies for purposes of research into methods of processing. A gala dinner was given at a hotel in Bonn for the minister of research, at which soup, dumplings, cream, and paste made of krill were served: the soup, reportedly, could not be distinguished from lobster soup.

B-20290

Sahrhage, D., Steinberg, R., **Antarctic krill—food for the future** [Der antarktische Krill—Nahrung für die Zunkunft?], *Bild der Wissenschaft.* Nov.1975 12(11), p.90-94, In German.

DLC Q3.B55

Existing knowledge on biological characteristics, geographic distribution and population amounts of krill is reviewed in some detail. Methods of catch and processing are described and German expeditions aimed at investigating prospects of exploitation are mentioned.

B-20314

Macdonald, J.A., Wells, R.M., **Physiological adaptation in antarctic fishes,** *New Zealand antarctic record.* 1978 1(1), p.17-23, 8 refs.

The object of the 1977 Auckland University studies of cold adaptation in antarctic fishes conducted at Scott Base was to determine how constant low temperature affects the conduction of nervous impulses and the transport of oxygen by the blood. Comparisons made between fast- and slow-conducting nerve fibers in the same nerve bundles of *Trematomus borchgrevinki* and *T. bernacchii* suggest that: 1) the slopes of temperature responses differ between fast and slow nerve fibers, but the responses of both extrapolate to the same temperature for zero velocity, probably indicating that both share membrane of the same composition; and 2) nerve impulse conduction in all fibers fails at upper temperatures near 30C, while neuromuscular transmission fails at about 16C. Comparative hematological data from *T. borchgrevinki* and *T. bernacchii* at rest and after exercise under heat stress show a lower concentration of hemoglobin in *T. bernacchii* blood, which seems to be compensated by an increased capacity to generate ATP anaerobically by formation of lactate.

B-20316

Monteath, C., **Weddell seal population dynamics Scott Base to Cape Royds,** *New Zealand antarctic record.* 1978 1(1), p.26-28.

Adult Weddell seals were counted from a U.S. Navy helicopter along the standard Scott Base to Cape Royds route and return. Population counts for the years 1973 to 1978 are tabulated, and the census route is illustrated. Fifty seals were taken for dog food, and their jaws and the female reproductive organs returned to New Zealand for age structure determinations.

B-20317

Monteath, C., **Summary of the annual Adelie penguin census at Cape Royds,** *New Zealand antarctic record.* 1978 1(1), p.29-30.

A sudden influx of breeding Adelies predictably occurred once again in the late Oct. period, going from nil on Oct. 22 to 618 occupied nests and 1865 Adelies on Oct. 31. The peak population for the season was noted on Dec. 30 when 2039 occupied nests were counted. These results are attributed to maintenance of a reasonable level of protection with minimal disturbance.

B-20322

Brown, S.G., **Twenty-ninth annual meeting of the International Whaling Commission, 1977,** *Polar record.* Jan. 1978 19(118), p.59-61.

The 29th annual meeting was held in Canberra, Australia, June 20-24, 1977. Sei whales in Southern Hemisphere areas II, V and VI were added to the revised classification of previously protected species and stocks. Statistics are given of catches by member nations in the 1976-77 antarctic season and the 1976 seasons outside the Antarctic, together with the catch limits for those seasons and the proposed new catch limits.

B-20346

Coudert, Y., ***Phylica nitida* on Amsterdam Island** [Le *Phylica nitida* d'Amsterdam], *France. Ministère d'Etat chargé des départements et territoires d'outre-mer. Terres australes et antarctiques françaises.* Jan.-Mar. 1976 No.67, p.31-46, In French.

The low-growing tree *Phylica nitida*, which forms a dense cover over parts of Amsterdam Island, is discussed. Its gross morphology, flower and fruit, its reproduction and methods of adaptation to high winds and local soil conditions, and problems of growing the seed-

lings in trays for later setting out are considered. Germination rate was significantly increased with the use of the growth hormone Exuberone.

B-20357

Conroy, J.W.H., Jones, B.J., **Follow the band. Southern giant petrel 5022741,** *Australian bird bander.* Dec. 1974, p.80-81, 4 refs.

Giant petrels *Macronectes spp.* banded on antarctic islands are regular visitors to coastal waters in temperate regions. This note represents the first record of a breeding adult, banded on Signy Island, South Orkney Islands, being recovered in Australian waters, and subsequently being recovered again breeding on Signy Island. (Auth.)

B-20383

Petushko, G.L., **Behaviour of krill in photic and electrical fields,** Boston Spa, England, British Library, Mar. 1970, 4p., For Russian original see 4B-7786.

Studies on krill attraction into a light field are summarized. Experiments showed that krill avoid the zones of intense light. Krill behavior in direct current fields in the sea and in aquariums shows a positive reaction toward the anode.

B-20384

Edwards, G., **Bird observations in the Weddell Sea,** *Sea swallow,* 1968 Vol.20, p.30-34.

DSI, QL671.S43

The author kept a bird observations log on his voyages from the Falklands to the South Orkneys, then to South Georgia, thence to Halley Bay and back by a different route to Port Stanley. The record covers the period Oct., 1964-Feb., 1965.

B-20385

Mikhailovskiĭ, IU.A., **Observations on krill in a zone of artificial illumination,** Boston Spa, England, British Library, Mar. 1970, 4p., For Russian original see 4B-7787.

Results of the experiments on krill carried out from Jan. 27 to March 2, 1965, with two underwater lamps (white and red) showed that krill actively avoided the bright electrical illumination but willingly entered the zone of half light, beyond the field of bright illumination. Data on the krill behavior in the Scotia and Weddell Seas are tabulated.

B-20386

Shust, K.V., **Visual observations on antarctic krill made on board the factory research ship *Akademik Knipovich*,** Boston Spa, England, British Library, Mar. 1970, 12p., For Russian original see 4B-7783.

Observations carried out in the Scotia Sea from Feb. 6 to March 10, 1965, indicated that krill "patches" occurred near the surface before noon and seldom toward the evening, and only in case of total or nearly total cloudiness. In the bright sun krill was never seen near the surface. Wind up to 7 tenths and sea roughness to 4 tenths have no influence on the formation of the krill patches, which usually consist of both immature and adult krill.

B-20389

Tuck, G.S., ed, **Observations at sea of seabirds in the sub-antarctic and antarctic zones south of 50 deg—late November, 1973 to late March, 1974,** *Sea swallow,* 1973/74 Vol.24, p.7-23, 2 refs.

DSI, QL671.S43

Crews of H.M.S. *Shackleton* and *Endurance* report here on birds spotted on their voyages in southern waters. Observations from both ships have been transferred to plotted maps. Along with the bird sightings, mention is made of ice conditions, weather, and other wildlife (whales, krill) that accompanied the bird observations.

B-20395

Markarov, R.R., ***Euphausia superba* Dana (Crustacea:Euphausiacea) reproduction** [Razmnozhenie *Euphausia superba* Dana (Crustacea: Euphausiacea)], *Moscow. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut morskogo rybnogo khozaĭstva i okeanografii. Trudy,* 1976 No.110, p.85-89, In Russian with English summary. 17 refs.

Variations in the distribution of *E. superba* on the spawning grounds off the South Orkneys are analyzed on the basis of the trawl catches obtained during six expeditions aboard the R/V *Akademik Knipovich. E. superba* spawn, on the main, from mid-Dec. to mid-Feb. Every year specimens from two year classes of the population participate in the spawning. The adults taking part in the reproduction for the second time spawn earlier than the first-time spawners. By autumn only one age group of adults has remained in the stock because older year classes die after spawning. (Auth.)

B-20397

Zinsmeister, W.J., **Struthiolaridae (Gastropoda) fauna from Seymour Island, Antarctic Peninsula,** *Ohio. State University, Columbus. Institute of Polar Studies. Contribution,* 1976 No.310, Congreso Geológico Argentino, 6th, Bahía Blanca, Argentina, 21-27 Sep. 1975. Actas. Vol.1 (1976), p.609-618, In English with Spanish summary. 15 refs.

Preliminary examination of the Eocene struthiolariid fauna from Seymour Island reveals that four distinct species of Struthiolaridae are present: *Struthiolarella nordenskjöldi* Wilckens, *Struthiolarella variabilis* Wilckens, *Struthiolarella* n. sp., and *Perissodonta laevis* (Wilckens). Sufficient material was obtained during the 1974-1975 field season on Seymour Island to document the presence of three distinct lineages of struthiolariid. Progressive morphologic changes within these lineages allows for the provisional establishment of a threefold biostratigraphic subdivision of the Eocene sequence. (Auth.)

B-20399

Kallio, P., Kärenlampi, L., **Photosynthesis in mosses and lichens,** International Biome Programme 3. IBP Synthesis Meeting on the Functioning of Photosynthetic Systems in Different Environments, Aberystwyth [Wales], 1973, Cambridge, England, Cambridge University Press, 1975, p.393-423, Refs. p.417-423.

DSI, QK882.I2

The following aspects of photosynthesis in mosses and lichens are discussed in this review article: maximal photosynthetic capacity; significance of local adaptation and acclimation for maximal capacity; light response; temperature response; response to moisture; relation between nitrogen fixation rate and photosynthetic rate; word model of carbon dioxide exchange; multiple regression model for carbon dioxide exchange; CO2 exchange in relation to dry matter production of reindeer lichens; and lichen pasture management. Throughout the article, and in the charts and tables, reference is made to a number of austral and antarctic species.

B-20401

Stonehouse, B., **General biology and thermal balance of penguins,** Advances in ecological research, ed. J.B. Cragg, Vol.4, London, Academic Press, 1967, p.131-196, Refs. p.192-196.

DLC QH540.A23

This study examines the terrestrial and aquatic environments of penguins, discussing possible environmental influences on morphology and behavior especially in relation to thermal balance. It summarizes the scattered literature on penguin habitats, assembles physiological and morphological data for the 18 species and six subspecies distinguished, and discusses the probable significance of heat regulation in relation to morphology and behavior for each of the geographic areas in which penguins are found and for each type.

B-20406

Oeklk, H., **Natural or human influences on population changes of Adelie penguins *(Pygoscelis adeliae)* in the Ross Sea sector of Antarctica** [Natürliche oder anthropogene Populationsveränderungen von Adéliepinguinen *(Pygoscelis adeliae)* im Ross-Meer-Sektor der Antarktis], *Journal für Ornithologie,* 1978 119(1), p.1-13, In German with English summary. Refs.

A final conclusion on the quantitative and even qualitative status of Adélie Penguins, one of the most abundant and characteristic bird species of Antarctica, must still be sought. The most intensively studied colonies in the Ross Sea sector have lost 30-40% of their breeding population between 1960/61 and 1971/72. Studies at Cape Crozier, Ross Island, show that breeding groups primarily decreased at the periphery of the colony, with continued human contact, influence by catching actions and low passing aircraft. The Cape Crozier decrease started in 1964, but afflicted all parts of the colony between 1967 and 1970. Other possible factors causing the decrease, such as bad weather conditions, food shortage, predators, parasites, infections, and pollution have not reached, either separated or even combined, the amount of interference caused by man at this site. Factors which influence the penguins outside the breeding grounds are totally unknown. (Auth.)

B-20411

Seppelt, R.D., **Studies on the bryoflora of Macquarie Island. II. *Ulota phyllantha* Brid,** *New Zealand journal of botany,* Mar. 1978 16(1), p.21-23, 12 refs.

The presence of *Ulota phyllantha* (Orthotrichaceae) on Macquarie Island is confirmed and the species illustrated. This represents the first record of the species from the New Zealand botanical zone. (Auth.)

B-20429

Savich-Liubitskaia, L.I., **Leafy mosses of East Antarctica** [Listostebel'nye mkhi Vostochnoĭ Antarktidy], *Botanicheskiĭ zhurnal,* Feb. 1978 63(2), p.272-290, In Russian. Refs. 289-290.

Moss collections of the Soviet Antarctic Expeditions 1955-1965 were examined. The following topics relating the East Antarctic leafy mosses are discussed: geographic distribution; morphology; reproduction; variability; and ecology.

B-20431

Maĭstruk, P.N., Rubenchik, B.L., Romanenko, A.M., **Effect of a new food product, krill paste, on chemical carcinogenesis** [Vliianie novogo pishchevogo produkta—pasty iz krilia na khimicheskiĭ kantserogenez], *Voprosy pitaniia,* Nov.-Dec. 1976 No.6, p.61-65, In Russian with English summary. 5 refs.

The effect of various types of protein in the dict on the carcinogenic action of two chemicals, n-dimethylaminobenzene and diethylnitrosamine, was studied in rats. Krill paste inhibited the action of both carcinogens on the development of hepatic tumors when compared to casein and beef protein.

B-20436

Watanuki, T., Fukushima, H., **Saline lake algae in Antarctica** [Nankyoku enko no seibutsu], *Polar news (Kyokuchi),* July 27, 1978 No.27, p.30-33, In Japanese.

The algal flora in the salt lakes on Skarvsnes and Langhovde Hills is reviewed. In the five saline lakes 81 taxa of diatoms have been identified so far. The most abundant species are *Tropidoneis laevissima* (Basillariophyta), endemic to Antarctica, and *Dunariella* sp. (Chlorophyta) with two flagellae, which form a summer bloom. It appears that the evolution of such halophilic algae is closely related to the history of saline lakes. In artificial culture media halophilic algae reproduction, as it is affected by salt concentration, was examined.

B-20444

Luk'ianova, T.S., **Applying statistics to the study of various factors affecting marine bottom fauna biomass distribution** [Primenenie metodov matematicheskoĭ statistiki pri issledovanii vliianiia razlichnykh faktorov na raspredelenie biomassy donnoĭ fauny v okeane], *Moscow. Universitet. Vestnik. Seriia 5 Geografiia,* Mar.-Apr. 1978 No.2, p.67-73, In Russian with English summary. 24 refs.

An analysis of maps of distribution of the biomass of the benthonic fauna and the study of other materials have enabled the author to establish certain factors that exert influence on the quantitative distribution of the benthonic fauna. There is a direct relationship between the quantitative distribution of the benthonic fauna and the biomass of zooplankton. An analysis of the correlation between the distribution of the benthonic fauna biomass and the distance from the continents showed a definite inverse relation. The distribution of biomass of benthonic fauna in all areas of ocean is related to depth. (Auth.)

B-20491

U.S. Naval Oceanographic Office, **Pacific Ocean. Biology of the Pacific Ocean. Part 2. The deep-sea bottom fauna. Pleuston,** Washington, D.C., 1970. 426p., AD-714 906, Transl. of Tikhiĭ okean. Biologiia Tikhogo okeana. Kniga 2. Glubokovodnaia donnaia fauna. Pleiston, edited by L.A. Zenkevich, Moscow, 1969. 128 refs.

This volume includes discussions of the type and distribution of deep-sea bottom fauna and pleuston of the Pacific Ocean, using data collected by the *Vitiaz'* Pacific Expedition. The first portion of the book is a collection of papers by a number of experts on taxonomy. In Part II, which is devoted to pleuston, the surface of the ocean is considered as a special biotope, and the organisms inhabiting it are considered as an ecologically united faunal complex. The existing data and the continued investigations of the pleuston biocenosis with regard to its species composition, internal and external biological connections, patterns of qualitative and quantitative distributions in relation to hydrological and meteorological regimes on the water surface make it possible to determine the role of pleuston in the biological processes of the ocean The treatment is organized taxonomically rather than geographically; references to Antarctic species are made throughout, and charts reflect research activity from the Arctic Ocean to the Antarctic coast. (Auth. mod.)

B-20495

Watson, G.S., **Counting penguins,** Princeton University, Dept. of Statistics, Oct. 1975, 8p. AD-A023 717.

This essay was written for students and teachers of elementary statistics and probability courses. It uses finite population sampling to illustrate some of the basic ideas of these courses. Applications to estimating wildlife populations (especially penguins) are given. (Auth.)

B-20497

Matthews, L.H., **Penguins, whalers, and sealers: a voyage of discovery,** New York, Universe Books, 1977, 165p.

DLC QL696.S473M37

The author is a naturalist who spent many years studying penguins. Travelling on sealers, whalers, merchant vessels, and any other type of ship available, he investigated the habits and habitats of jackass, gentoo, macaroni, Adelie, ringed and king penguins; he devotes a chapter of the book to each type. Interspersed with information on penguins are tales of adventures on whaling ships, storms at sea, and other amusing and well-told anecdotes.

B-20504

Kelly, M.D., Lukaschewsky, S., Anderson, C.G., **Bacterial flora of antarctic krill *(Euphausia superba)* and some of their enzymatic properties,** *Journal of food science,* July-Aug. 1978 43(4), p.1196-1197, 18 refs.

Four fresh and two frozen samples of the krill *Euphausia superba* were examined bacteriologically. Coryneform like organisms were predominant in the bacterial flora of fresh krill along with strains of *Pseudomonas, Moraxella*-like taxa, *Alcaligenes,* and *Flavobacterium.* Bacterial counts were low and ranged from 650/g-1,100/g at 25C. Studies of the spoilage flora developing during cold storage show that, similar to other fishery products, bacteria of the *Pseudomonas, Alcaligenes* and *Moraxella*-like taxa groups predominate. The bacterial count was low, 9,800/g at 25C, on krill processed and stored at -20C for 45 days. Enzymatic evaluation showed that krill bacteria have strong proteolytic and lipolytic activity. (Auth.)

B-20511

Moiseev, P.A., **Biological resources of the world ocean and the prospects for their use,** Unpublished, 1978, 13p., Translated from Voprosy ikhtiologii, 17(5):1977.

Protein requirements of the world's population by the year 2000 will necessitate an increase of the present total sea and fresh-water catch of 72 mill. tons to 185 mill. tons. Such a rise in productivity of seafood-producing industries demands far-reaching changes in attitudes and approaches to ocean exploitation. Eight specific suggestions are put forth to achieve this increased production; one is the study of bioresources of near-antarctic waters, the potential source of fish, krill, squid, and other species. Projections for various segments of the fishing industry and for various areas of the sea and for fresh-water catches for the year 2000 are given.

B-20512

Moiseev, P.A., **Some ways of increasing the world ocean bioproductivity,** Soviet-Japanese Symposium on Aquaculture, 2nd, Moscow, November 1973. Proceedings, Moscow, All Union Research Institute of Marine Fisheries and Oceanography, 1977, 8p.

The author offers suggestions aimed at maximizing fishery harvests in the world ocean. Among these are krill fishing, transplanting species to waters where an adequate plankton base is available, harvesting predators in order to allow commercial species to multiply unhindered, and other more radical approaches.

B-20525

Loftas, T., **In for the krill,** *Marine policy,* July 1978 2(3), p.170.

At their ninth consultative meeting the Antarctic Treaty powers agreed to a convention which will create a commission on the conservation of antarctic marine living resources. The commission would require a permanent secretariat as well as a source of scientific advice on the state of exploited stocks. It is suggested that the non-Treaty countries should consider bringing together FAO and other inter- and non-governmental bodies having research interests in the Southern Ocean resources to secure a say in the management and future allocation of the resources during the implementation of the convention.

B-20526

Christians, O., Leinemann, M., **Experiments in making sausages from krill** [Versuche: Entwicklung einer Krillwurst], *Fleischwirtschaft,* June 1978 58(6), p.948-949, 955-957, In German and English.

One of the objects of the German expeditions to the Antarctic is to find ways of using krill in food. Experiments in this area have produced a well-bound krill mixture with the consistency of a Brühwurst, containing cooked krill forcemeat, fish, and milk protein. By means of further processing, such as smoking and scalding, the mixture can be used for other food products. Experiments to develop krill products using raw krill are planned.

B-20527

Horning, D.S., Jr., Fenwick, G.D., **Leopard seals at the Snares Islands, New Zealand,** *New Zealand journal of zoology,* Mar. 1978 5(1), p.171-172.

Observations of a 270-cm-long leopard seal on Main Island are reported. Regurgitated and defecated matter from the seal showed the remains of a crested penguin. The feces also contained tapeworms. Two Hooker's sea lions approached the seal in the water, but retreated when it turned sharply towards them. When the leopard seal passed within 3 m of a basking New Zealand fur seal, the fur seal immediately dived deeply.

B-20536

Daniels, R.A., Lipps, J.H., **Predation on foraminifera by antarctic fish,** *Journal of foraminiferal research,* Apr. 1978 8(2), p.110-113, 6 refs.

Analysis of the gut contents of over 1,600 antarctic fish reveals that foraminifera are not an important part of the fish diet. Indiscriminate slurping of sediment probably accounts for most foraminiferal ingestion by bottom-feeding fish, among which *Notothenia gibberifrons* is notable. This process, however, has little or no impact on populations of living foraminifera. (Auth.)

B-20537

Jenkins, D.G., ***Guembelitria samwelli* Jenkins, a new species from the Oligocene of the Southern Hemisphere,** *Journal of foraminiferal research,* Apr. 1978 8(2), p.132-137, 13 refs.

Guembelitria samwelli Jenkins n.sp. is described and illustrated from the Oligocene of New Zealand. The paleogeographic distribution and brief stratigraphic range of *G. samwelli* n.sp. in the lower part of the upper Oligocene of the Southern Hemisphere marks the beginning of the circum-Antarctic Current and the opening of Drake Passage. (Auth.)

B-20538

Lohmann, G.P., **Abyssal benthonic foraminifera as hydrographic indicators in the western South Atlantic Ocean,** *Journal of foraminiferal research,* Jan. 1978 8(1), p.6-34, 18 refs.

Study of the distribution of 25 abyssal benthonic foraminiferal taxa from core-top samples in the western South Atlantic Ocean has identified distinctive water-mass faunas and shows that variations in their abundance are strongly correlated with variations in the physical and chemical properties of the deep water. North Atlantic Deep Water (NADW) and Antarctic Bottom Water (AABW) benthonic foraminiferal faunas are differentiated primarily by the abundance of *"Epistominella" umbonifera.* AABW samples are characterized by

a more evenly distributed, diverse fauna (miliolids, *Globocassidulina subglobosa, Uvigerina peregrina, Planulina wuellerstorfi, Cibicidoides kullenbergi,* and *Hoeglundina elegans).* Over 90 percent of the faunal variation observed among the samples can be expressed by five Q-mode principal components; two of these can be correlated with the local hydrography. Regression formulas were derived for estimating *in situ* temperature and oxygen content from benthonic foraminiferal abundances. The best estimates for oxygen content are given by regression formulas derived separately for each water-mass. (Auth. mod.)

B-20539

Cooke, W.J., ***Tubinella funalis* (Brady) as a sessile form, with notes on its distribution and wall structure,** *Journal of foraminiferal research,* Jan. 1978 8(1), p.42-45, 23 refs.

Tubinella funalis was described by H.B. Brady (1884) from specimens collected by *Challenger* at Kerguelen and Prince Edward Islands in the Indian Ocean Subantarctic and from Humboldt Bay, New Guinea. No type locality was designated. Since then it has been found in a number of localities in the tropics and in antarctic and subantarctic waters. The specimen, which had heretofore been considered a free living species, has been discovered in Hawaii as a sessile form, attached by the base of the proloculus, with the test projecting free of the substrate. Its unusual distribution record and wall structure are briefly discussed.

B-20543

Early, J.W., **New Diapriinae (Hymenoptera: Diapriidae) from the South Island and Subantarctic islands of New Zealand,** *Royal Society of New Zealand. Journal,* June 1978 8(2), p.207-228, 18 refs.

Present knowledge of New Zealand Diapriidae (Hymenoptera, Proctotrupoidea) is summarized. The generic status of *Antarctopria* Brues is not clear, but it is thought to have originated from several species of *Spilomicrus* Westwood. Six species, *Antarctopria coelopae* n.sp., *A. latigaster* Brues, *A. rekohua* n.sp., *A. campbellana* Yoshimoto, a new status, *A. diomedeae* n.sp., and *Spilomicrus pilgrimi* n.sp. are described, and a key is given. The species are brachypterous or apterous and are morphologically variable. Collection, distribution, habitat, and host data are included so that information on all species is complete as far as is known. (Auth.)

B-20546

Daniels, R.A., **Nesting behaviour of *Harpagifer bispinis* in Arthur Harbour, Antarctic Peninsula,** *Journal of fish biology,* May 1978 12(5), p.465-474, 20 refs.

Observations of the nesting behavior of the plunder fish, *Harpagifer bispinis,* from laboratory tanks at Palmer Station and from diving in Arthur Harbour, Anvers Island, Antarctic Peninsula, are the first to be recorded for any antarctic fish. Females of this species construct a nest and, unless removed, guard it throughout the four month incubation period. Guards clean the eggs and protect them from predators and parasites. If a guarding female is removed from a nest, another fish assumes guard responsibilities. This species exhibits traits which are common in other antarctic forms. The sequence of reproductive events affords adults, eggs and fry a high degree of protection and allows each stage to use available resources fully. (Auth.)

B-20548

Boltovskoy, E., Wright, R., **Recent foraminifera,** The Hague, Netherlands, W.Junk, 1976, 515p., Bibliography.

DLC QL368.F6B613

This book is intended for students of foraminifera at all levels, and for workers with foraminifera in all kinds of institutions. It encompasses all aspects of the Recent foraminifera, both living and dead, planktonic and benthonic, and the numerous approaches and techniques used in their study. A chapter on benthonic foraminifera in normal marine waters includes a discussion, with maps, of foraminiferal assemblages in the antarctic province and comparison with arctic species. The antarctic region south of South America can be divided into three subprovinces on the basis of foraminifera: Bellingshausen Sea, Weddell Sea, and South Georgia Islands. The high proportion of agglutinated specimens in arctic and antarctic waters may be explained by the high solubility of CaCO3 in cold water. Calcareous specimens frequently encountered in these waters belong to the Miliolidae, Biliminidae, Nonionidae and Elpidiidae.

B-20549

Horning, D.S., Jr., Schuster, R.O., Grigarick, A.A., **Tardigrada of New Zealand,** *New Zealand journal of zoology,* June 1978 5(2), p.185-280, 19 refs.

This paper treats the biosystematics of 55 species of Tardigrada found in New Zealand and its offshore islands. The genera *Oreella, Echiniscus, Pseudechiniscus, Hypsibius, Macrobiotus, Linmenius* n.gen., and *Milnesium* are represented. Areas sampled included Campbell Island, the Chatham Islands, d'Urville Island, the North Island, the Open Bay Islands, the South Island (and small islands in Fiordland), the Snares Islands, Stewart Island, and the Three Kings Islands. There were 1354 collections comprising algae, bryophytes, fungi, lichens, and marine, freshwater, litter, and soil samples. Tardigrades were recovered from 577 terrestrial and semi-terrestrial habitats; no marine tardigrades were found. The systematics section includes keys to the taxa, illustrations, diagnoses, and descriptions of species. Holotypes of the new species and subspecies are deposited in the National Museum of New Zealand, Wellington. The ecology and geographical distribution of tardigrades within New Zealand are discussed. Abbreviated collection data and a list of plant species from which tardigrades were extracted are included. (Auth. mod.)

B-20550

Barker, G.M., **Reappraisal of *Athoracophorus bitentaculatus,* with comments on the validity of genus *Reflectopallium* (Gastropoda: Athoracophoridae),** *New Zealand journal of zoology,* June 1978 5(2), p.281-288, 9 refs.

The slug *Athoracophorus bitentaculatus* (Quoy & Gaimard, 1832) is redescribed from material collected in the northern third of the North Island of New Zealand. Its anatomy is described and figured, local variation in the condition of the lateral grooves and mantle is figured, and supplementary information on its biology and distribution is given. Its identity and taxonomy are discussed in the context of earlier work on the species. Evidence is presented for the reduction of *Reflectopallium* Burton, 1963 to synonymy with *Athoracophorus* Gould, 1852. A revised key to New Zealand and subantarctic genera of Athoracophoridae is given. (Auth.)

B-20551

Wells, R.M.G., **Observations on the haematology and oxygen transport of the New Zealand fur seal, Arctocephalus forsteri,** *New Zealand journal of zoology,* June 1978 5(2), p.421-424, 16 refs.

Red cell count, haemoglobin concentration, haematocrit, mean cell volume, and mean cell haemoglobin concentration were recorded for the fur seal *Arctocephalus forsteri* (Lesson) and compared with these characteristics of red cells in other Pinnipedia, including the Weddell seal, *Leptonychotes weddelli.* The data did not indicate haematological adaptations for deep diving nor for extended periods of submergence. Two distinct haemoglobin types were isolated from the red cells by electrophoresis. The oxygen affinity of the blood was low, as measured by half-saturation values (p50) of 42.3 mm Hg at pH 7.1 and 26.2 mm Hg at pH 7.4 and 37C. The low oxygen affinity was mediated by erythrocytic 2,3-diphosphoglycerate, and on this basis a high turnover of oxygen to the tissues is postulated. The role of the

blood in oxygen transport appears to be suited for feeding near the surface rather than by deep diving. (Auth. mod.)

B-20554

Clarke, M.R., **Beaks, nets and numbers,** *Zoological Society of London. Symposia,* 1977 No.38, p.89-126, 57 refs.

Comparisons are made between collections of cephalopod beaks obtained from the stomachs of a variety of predators, including sperm whales, porpoises, seals, sharks, tuna and birds, and collections of cephalopods obtained with several kinds of nets. Over 140,000 lower beaks from the stomachs of sperm whales from various regions, including the Antartics and more than 4000 specimens from nets form the main basis for comparisons, together with selected published work. Comparisons are made between the family composition of various samples from different regions, and the coverage is often sufficient to distinguish between regional effects and differences due to type of sampler. The relative numerical importance of families in the diet of the sperm whale in different regions is assessed. Because sperm whales are so large and numerous they must play an important part in their trophic level. Cephalopods form a considerable part of the food of the sperm whale so that they too must be very important in the ecology of the oceans. The relationship, by weight, of cephalopod families in the sperm whale diet is also assessed for various regions.

B-20556

Gosztonyi, A.E., **Results of the research cruises of FRV *Walther Herwig* to South America. XLVIII. Revision of the South American Zoarcidae (Osteichthyes, Blennioidei) with the description of three new genera and five new species** [Ergebnisse der Forschungsreisen des FFS *"Walther Herwig"* nach Südamerika. XLVIII. Revision der südamerikanischen Zoarcidae (Pisces, Blennioidei), mit Beschreibungen von drei neuen Gattungen und fünf neuen Arten], *Archiv für Fischereiwissenschaft,* Mar. 1977 27(3), p.191-249, In German with Spanish and English summaries. 117 refs.

The South American eelpouts, including five new taxa, are described or redescribed. Biological data, and distributional patterns are also provided. The species studied appear to belong to one of two bathymetrically distinct groups: one inhabiting the intertidal zone and Continental Shelf, the other living on the Continental Slope. The evaluation of morphological characters has provided evidence for a relationship between the littoralization of the species and, among other features, the reduction of the cephalic lateral-line system, the forward migration of the dorsal fin origin and the acquisition of a strong vertebral asymmetry. A marked sexual dimorphism in the dentition in some of the littoral forms is described and illustrated for the first time. A key to genera and species dealt with, is given. A number of antarctic species are included. (Auth. mod.)

B-20557

Roschke, N., Schreiber, W., **Analysis of krill, krill products and antarctic fish species** [Analytik von Krill, Krillprodukten und antarktischen Fischen], *Archiv für Fischereiwissenschaft,* Dec. 1977 28(2/3), p.135-141, In German with English summary. 13 refs.

Analyses of raw and cooked krill, raw and cooked minced krill, krill exoskeletons and krill meal have been performed for protein, fat, dry material, ash, carbohydrate, chitin and chloride. The antarctic fish species *Notothenia rossi marmarata* and *Dissostichus eleginoides* also were analyzed for most of these substances. A limited investigation on the influence of the season on the protein and fat content and the dry material of raw krill is presented. (Auth.)

B-20558

Kock, K.-H., Möller, H., **On the occurrence of the parasitic copepod *Eubrachiella antarctica* on some antarctic fish,** *Archiv für Fischereiwissenschaft,* Dec. 1977 28(2/3), p.149-156, With German summary. 10 refs.

In the course of the Antarctic expedition 1975/76, 1367 fishes belonging to six species of the families Nototheniidae and Chaenichthyidae were examined for parasitic copepods in the buccal cavity and on the fins. All parasites belong to the species *Eubrachiella antarctica.* Infestation rates and mean infestation intensities are given for each species. Different infestation rates in *Champsocephalus gunnari* (Chaenichthyidae) from South Georgia, and the South Orkney Islands may indicate the presence of two distinct stocks. For *Dissostichus eleginoides* (Nototheniidae) from Burdwood Bank a positive correlation between increasing infestation per fish and increasing fish length could be demonstrated. (Auth.)

B-20559

Post, A., **Description of two species of the genus *Notolepis, N. coatsi* Dollo, 1908 and *N. annulata* sp.n. from the Antarctic Sea (Osteichthyes, Myctophiformes, Paralepididae)** [Beschreibung zweier *Notolepisarten, N. coatsi* Dollo, 1908 und *N. annulata* sp.n. aus der Antarktis (Osteichthyes, Myctophiformes, Paralepididae)], *Archiv für Fischereiwissenschaft,* June 1978 29(1/2), p.1-22, In German with English summary. 14 refs.

Notolepis coatsi Dollo, 1908 and a new species *N. annulata* sp.n. are described in the present paper. Both species were collected during the antarctic expedition of the RV *Walther Herwig* and the commercial trawler FMV *Weser* in 1975/76. Although frequently known from the stomachs of whales, *N. coatsi* is still insufficiently treated in the literature. A description, based on 32 specimens, therefore is given, including morphometric and meristic characters. The new species is represented in the ISH collection by a total of 73 specimens, 17 of which are included in the type-material. *N. annulata* is characterized by its highly specialized lateral-line-scales. (Auth.)

B-20560

Kuhl, J., Nittinger, J., Siebert, G., **Utilization of krill shells in feeding experiments with rats** [Verwertung von Krillschalen in Fütterungsversuchen an der Ratte], *Archiv für Fischereiwissenschaft,* June 1978 29(1/2), p.99-103, In German with English summary. 13 refs.

An experimental sample of krill shells collected during the German antarctic expedition of 1975/76 was analyzed according to conventional methods of food analyses and the amino acid composition determined. Krill shells contained about 50% crude protein (33% pure protein). With the aid of N-balance studies, the biological value of krill shell protein was determined as 89, and the apparent digestibility at 75%; analytical data of the N-balance demonstrated partial utilization of chitin-N in the protein metabolism of the rat. Elevated caecal weights of the rats as well as microscopical observations on rat feces indicate strongly the participation of intestinal bacteria in chitin degradation. (Auth.)

B-20573

Kozlov, A.N., **Some characteristics of fat metabolism in *Notothenia rossi marmorata* in the prespawning period** [Nekotorye osobennosti zhirovogo obmena mramornoĭ nototenii *(Notothenia rossi marmorata,* Fisher) v prednerestovyĭ period], *Moscow. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut morskogo rybnogo khoziaĭstva i okeanografii. Trudy,* 1972 85(3), p.117-128, In Russian with English summary. 17 refs.

The sexual products of Notothenia mature in the presence of an increased absolute fat and protein content in the organism, as is the case with many other autumn and winter spawners. The high specific fat content in Notothenia is believed to depend on the species' living conditions in the antarctic regions: a higher energy metabolism, vertical feeding migrations and low water temperatures.

B-20574

Sil'ianova, Z.S., Kozlov, A.N., **Fecundity of *Notothenia rossi marmorata* and its relation to fat content** [Plodovitost' mramornoĭ nototenii i ee sviaz' s zhirnost'iu], *Moscow. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut morskogo rybnogo khoziaĭstva i okeanografii. Trudy.* 1972 85(3), p.129-137, In Russian with English summary. 14 refs.

There are two generations of yolky oocytes in the ovaries of *Notothenia rossi marmorata* of which only one is spawned. The individual absolute and relative fecundity of Notothenia increases with the length and weight of fish. The fecundity of this species, its absolute value in particular, decreases during egg ripening. A fall in the absolute fecundity is followed by a decrease in the number of eggs in the gonads, an increase in the weight and diameter of eggs and in their fat content. A positive correlation has been noted between the absolute fecundity and fat content of the species investigated.

B-20576

Seals of the Antarctic, *African wildlife,* Summer 1974 28(4), p.12-16.

The South Africans are conducting research into the seals of Marion Islands. Represented here are several species—Weddell, elephant, leopard, and even the rare Ross seals. Initial observations concerning the breeding and feeding patterns of the seals are offered. A tagging effort has been begun and more extensive facilities, such as huts and helicopter support, will permit behavioral and ecological studies to be expanded.

B-20580

Armstrong, P., **Baobabs: remnant of Gondwanaland,** *New scientist,* Jan. 27, 1977 73(1036), p.212-213.

The global distribution of the baobab tree, reflecting the drift of continents, is discussed. It is suggested that the tree, now found in African savanna, in northwest Australia, and in Madagascar, may be a relic of the flora of Gondwanaland. It is noted that an exchange of fauna and flora between South America and Australia was possible through Antarctica until the early Tertiary; and that Africa, which probably became separated from South America 110 m.y.a. and from Antarctica about 20 m.y. later, still shares a significant number of plant and animal groups with the other southern continents, despite its relative isolation.

B-20581

Panfilov, B.G., Pervushin, A.S., **Reasons for incursions of female sperm whales into antarctic waters** [O prichinakh zakhoda samok kashalotov v Antarktiku], *Atlanticheskiĭ nauchno-issledovatel'skiĭ institut rybnogo khoziaĭstva i okeanografii. Trudy.* 1973 No.51, p.95-105, In Russian. 15 refs.

Female sperm whales are not generally encountered in antarctic waters. However, under certain atmospheric conditions, when frontal zones develop and warm, salty surface waters penetrate into high latitudes and converge along high pressure fronts, squids take advantage of this configuration to extend their feeding grounds. In turn, female and young male sperm whales exploit the surface aggregations of squid.

B-20582

Budylenko, G.A., Pervushin, A.S., **Fish as sperm whale prey in Southern Ocean whaling zones** [O vstreche ryb v pitanii kashalota *(Physeter catodon* L., 1758) v osnovnykh produktivnykh zonakh IUzhnogo okeana], *Atlanticheskiĭ nauchno-issledovatel'skiĭ institut rybnogo khoziaĭstva i okeanografii. Trudy.* 1973 No.51, p.106-114, In Russian. Refs. p.113-114.

Stomach contents of sperm whales taken in various parts of the world are contrasted; data show that fish play a much less significant role in sperm whale diet in antarctic water than elsewhere. North Pacific sperm whales take 37-38 species of fish, Southern Ocean whales at least 13. Squids were a popular item in southern sperm whale diets.

B-20583

Budylenko, G.A., **Sei whale behavior in the Southern Ocean** [Nabliudeniia za povedeniem seĭvalov v vodakh IUzhnogo okeana], *Atlanticheskiĭ nauchno-issledovatel'skiĭ institut rybnogo khoziaĭstva i okeanografii. Trudy.* 1973 No.51, p.142-149, In Russian. 16 refs.

Behavioral observations on various aspects of the activity of sei whales in subtropical and antarctic waters are summarized, and the differences between patterns in these two regions commented on. Depth and frequency of soundings, duration of dives, frequency and intensity of blowing, length of time spent at the surface between dives, and other types of behavior are included in the observations made by whaling crews.

B-20584

Latyshkevich, A.I., Pervushin, A.S., IArogov, B.A., **Effect of hydrological conditions in the Scotia Sea on aggregations of baleen whales** [Vliianie gidrologicheskikh usloviĭ moria Skosha na formirovanie kontsentratsiĭ usatykh kitov], *Atlanticheskiĭ nauchno-issledovatel'skiĭ institut rybnogo khoziaĭstva i okeanografii. Trudy.* 1973 No.51, p.172-178, In Russian. 4 refs.

1971 was a particularly good year for Scotia Sea whaling, and the reasons for this situation are sought. It appears that in that year the Brazil current dropped farther south than usual and caused both local warming of the waters and increased advection. Higher krill concentrations resulted from the anomaly and in turn caused greater aggregations of fin and sei whales in the Scotia Sea region.

B-20585

Meisner, E.E., **New species of *Chaenichthys* from the Southern Ocean** [Novyĭ vid belokrovnoĭ shchuki iz IUzhnogo okeana], *Vestnik zoologii,* Nov.-Dec. 1974 No.6, p.50-55, In Russian with English summary. 4 refs.

A new fish species *Chaenichthys velifer* sp. n. from Antarctica differs from the relative *Ch. rhinoceratus* Richardson, 1844 in greater body height (its length contains the height less than 5 times), ray quantity and I D form, structure of the lower lateral row of bony plates and opercular spine, vertebra quantity, color and pattern of drawing. These characters serve as a basis of the identification key for the species of genus *Chaenichthys. Ch. velifer* inhabits the area near Kerguelen Islands at depths to 150 m. Its food is fish and Cephalopoda. (Auth.)

B-20586

Huntley, B.J., **Altitudinal distribution and phenology of Marion Island vascular plants,** *Tydskrif vir natuurwetenskappe,* Dec. 1970 10(4), p.255-262, 5 refs.

Data on the altitudinal distribution and phenology of vascular plants collected during a 15-month visit to Marion Island, South In-

dian Ocean, are presented. The island is extremely isolated, volcanic, of quarternary age, and experiences a harsh isothermal tundra climate. The indigenous vascular flora comprises 22 species; trees and shrubs are absent. The upper altitudinal limits of these species varies from less than 100 m in salt-spray dependant *Tillaea moschata* and *Cotula plumosa*, to 765 m in *Azorella selago*. Factors contributing to the altitudinal limitation of plants, such as temperature lapse rate, wind chill and mechanical damage, and salt-spray deposition, are discussed. The phenological behavior of 12 commoner species is described and related to the asymmetry of day length and temperature rhythms. Atypical phenological behavior in *Poa cookii* and *Agrostis magellanica* is noted. (Auth.)

B-20591

Falla, R.A., **Banded Dotterel at the Auckland Islands: description of a new sub-species,** *Notornis*. June 1978 25(2), p.101-108, 8 refs.

The distribution and morphology of Auckland I. specimens of the Banded Dotterel are discussed and compared with that of the mainland specimens, and a new sub-species is described. The adult plumage of *Charadrius bicinctus exilis* subsp. nov. is generally similar to *C. bicinctus bicinctus* as found on the New Zealand mainland, but the Auckland I. birds are larger in all dimensions. Thus, the occurrence of two closely related forms, not overlapping in range, and differing mainly in body size and plumage pattern, is now established for the New Zealand region.

B-20592

Collen, J.D., **Biological observations from Black Island, Antarctica,** *Notornis*. June 1978 25(2), p.150-153.

This note reports the discovery of an almost complete carcass of an Adelie penguin in a north-trending valley at the northwestern end of Black I., some 30 km from the edge of the Ross Ice Shelf, and the remains of four seals. Three are mummified Crabeater seals. The southernmost and most complete carcass was some 40 km from the edge of the ice shelf. None of the carcasses appear to have been attacked by skuas.

B-20606

Semina, G.I., **Distribution of indicator species of planktonic algae in the world ocean,** *Oceanology*, Apr. 1978 17(5), p.573-579, Translated from Okeanologiia, 17(5):1977. 112 refs.

Maps of the distribution of 14 common phytoplankton species serving as indicators of specific water masses are presented. These maps are based on all available Soviet and foreign data covering the entire World Ocean. The bases of the ranges and the expatriation areas of the phytoplankton species, and their connection with large-scale gyres, are considered for the first time. It was found that endemic species exist for each of the subpolar gyres and for each pair of gyres in the tropics (central and equatorial). In addition, there are endemic inhabitants of the glacio-neritic zones and the global transition zone in the subantarctic. Recently published regionalization schemes recognizing only two temperate zones and a tropical zone do not reflect the entire diversity of types of ranges of phytoplankton species. (Auth)

B-20612

Samorodnova, V., **Food for whales is food for the gods (krill, the antarctic shrimp)** [Pishcha kitov—pishcha bogov (o krile—antarkticheskoĭ krevetke)], *Khimiia i zhizn'*, May 1973 No.5, p.71-74, In Russian.

DLC QD1.K5312

The development of the krill fishery and of products from the small crustacean is traced to introduce the public to a new food source. Appended are three recipes for the Soviet krill paste marketed under the label "Okean," one for a creole-like main dish, and two for hors d'oeuvres.

B-20621

Ainley, D.G., **Activity patterns and social behavior of non-breeding Adelie penguins,** *Condor*, Summer 1978 80(2), p.138-146, 12 refs.

The behavior of breeding and non-breeding Adélie penguins five years old and older was compared to gain insight into the factors determining their breeding status. About 24% of males and 10% of females at least five years old were non-breeders at Cape Crozier; all should have been physiologically capable of breeding. Non-breeders on the average arrived later and remained at the rookery for less time than breeders. Older non-breeders visited the rookery twice each season for long periods compared to 35-45 shorter visits by breeders. The activity level of a male correlated with pairing. Non-breeding males were less active socially and individually than males that eventually bred. Non-breeders made poorer nests than eventual breeders. Non-breeding males, particularly younger ones, either tended to avoid a female model placed in their nests or they displayed more to it and otherwise acted less directly. Breeding males prior to pairing and older non-breeders acted directly toward the model, either copulating or attempting to expel it from the nest. Non-breeding among mature female Adélie penguins is most likely related to poor nutritional reserves at the time of arrival in spring. (Auth. mod.)

B-20632

Weinrich, J.A., Baker, J.R., **Adelie penguin *(Pygoscelis adeliae)* embryonic development at different temperatures,** *Auk*, July 1978 95(3), p.569-576, 28 refs.

Adelie penguin eggs were artificially incubated at five different constant temperatures: 26, 30, 40, and 42C. A general increase in embryonic development rate was observed with higher incubation temperatures. Embryonic growth and development were not completely prevented at either 26 or 42C. Mortality of embryos was lowest at 34C, and embryonic death occurred more frequently during the first week of incubation at higher temperatures other than at lower temperatures. Abnormal development was most common at temperatures other than 34C. Some abnormal conditions were characteristic of low incubation temperatures, while others were found most often at high temperatures. It is suggested that the optimum constant incubation temperature for the Adelie penguin embryo may be slightly higher than 34C. (Auth.)

B-20655

International Commission on Whaling, **Report and papers of the Scientific Committee of the Commission,** London, 1976, 447p., Refs. passim.

F SH381.I484 1975

This report summarizes the activities of the Scientific Committee of the International Whaling Commission for the year 1975. It contains the Committee agenda, draft rules of procedure, reports of various committees and meetings, policy statements on various whaling issues, lists of reports and publications, papers presented at the June 1975 meeting, and other matters coming before the Committee. For abstracts of selected papers see B-20152 through B-20154 and B-20656 through B-20667.

B-20656

Brown, S.G., **Whale marking—progress report 1975,** International Commission on Whaling. Report and papers of the Scientific Committee of the Commission, 1975, London, 1976, p.31-38, 1 ref.

F SH381.I484

Statistics for whale marking recoveries in the Antarctic for 1972/73 and 1973/74, in the North Pacific for 1974, and in South

African waters for 1972-74 are summarized. Tabular data set forth the species marked, the marking and recovery dates and sites, and the age, sex, and length of recovered whales. Ten marked recoveries were made in the Antarctic during the 1972/73 whaling season and thirteen during 1973/74.

B-20657

Allen, K.R., **Some properties of the Schaefer model for baleen whale populations,** International Commission on Whaling. Report and papers of the Scientific Committee of the Commission, 1975, London, 1976, p.180-196.

F SH381.I484

This paper examines some of the implications for management purposes of the Schaefer-type model as applied to baleen whale populations. The length-weight and growth parameters used provide a satisfactory basis for modeling the antarctic fin whale population. Using these parameters sustainable yields from stable populations have been calculated for a series of population levels relative to an assumed unexploited population size of 10,000.

B-20658

Holt, S.J., **Maximum sustainable yield in weight and related matters,** International Commission on Whaling. Report and papers of the Scientific Committee of the Commission, 1975, London, 1976, p.203-214.

F SH381.I484

This paper examines the use of the maximum sustainable yield (MSY) criterion for the management of whale stocks and outlines regulatory measures for maximizing yields in weight. The use of the MSY (weight) concept is believed to be especially applicable in the case of sperm whale stocks, which are the most important species by weight (and, probably also by value) in terms of present catches in the Antarctic and in the world. Five-year averages of the weights of antarctic and world catches show a progressive decline in mean size, which is particularly marked in the case of the sperm whale. It is recommended that all sperm whale quotas be reduced in order to permit some rebuilding of male stocks and to slow down the reduction in females now being caused by setting quotas at two or three times the present replacement yields.

B-20659

Ohsumi, S., **Conversion of sustainable yield curve by numbers into that by weight in the fin and sperm whale populations,** International Commission on Whaling. Report and papers of the Scientific Committee of the Commission, 1975, London, 1976, p.215-224, 9 refs.

F SH381.I484

A sustainable yield curve by numbers is converted into one by weight, using the population model, growth curve and length-weight relationship of the antarctic fin whale and the North Pacific sperm whale. The present examination indicates that the MSY (maximum sustainable yield), MSY population level and rate of exploitation by numbers are almost the same as those by weight, especially in baleen whales, though there are some differences among them in the sperm whale. It is suggested that the management of whales be based on population by numbers instead of population by weight.

B-20660

Allen, K.R., **More flexible model for baleen whale populations,** International Commission on Whaling. Report and papers of the Scientific Committee of the Commission, 1975, London, 1976, p.247-263, 2 refs.

F SH381.I484

A model based on a symmetrical parabola relating the annual numerical excess of recruitment over natural mortality to the numerical size of the breeding stock has been used in the analysis of baleen whale populations. However, this model contains several assumptions which severely limit its application. One of these is that the recruitment rate is linearly related to numerical population size, and therefore that the maximum sustainable yield is obtainable from a population at 50% of the unexploited population size. Another is that the age at maturity is the same as the age at recruitment so that the rate of recruitment is directly related to the size of the exploited population. Data on antarctic minke whale stocks are illustrated.

B-20661

Best, P.B., **Status of whale stocks off South Africa, 1974,** International Commission on Whaling. Report and papers of the Scientific Committee of the Commission, 1975, London, 1976, p.264-286, 14 refs.

F SH381.I484

The status of whale stocks at South Africa along the Natal coast, along the southern coast, and at Gough and Marion Islands is assessed. Observations were made of two right whales at Gough Island In Aug. 1974 and one right whale at Marion Island in Sep. 1974. Trends in the availability of fin, sei and minke whales off Durban are compared with the catches in antarctic Area 3 for the years 1965-1974.

B-20662

Breiwick, J.M., **Population estimation of antarctic minke whales based on Japanese catch and effort data,** International Commission on Whaling. Report and papers of the Scientific Committee of the Commission, 1975, London, 1976, p.287-296, 5 refs.

F SH381.I484

Japanese catch per unit effort (CPUE) data on minke whales for the 1972/73, 1973/74, and 1974/75 antarctic seasons show decreasing trends in Areas 3 and 4, and in the two areas combined. The observed declines suggest that abundance may be decreasing in Areas 3 and 4 and that sighting data may have previously overestimated population sizes.

B-20663

Gambell, R., **Male sperm whale density trends in the southern hemisphere,** International Commission on Whaling. Report and papers of the Scientific Committee of the Commission, 1975, London, 1976, p.317-328, 7 refs.

F SH381.I484

Analyses of pelagic catches of male sperm whales per unit of effort, incorporating a tonnage correction factor but without an Asdic correction, suggest that male sperm whales in the southern hemisphere have experienced varying changes in the nine stock divisions. Antarctic and temperate zone pelagic catch data are summarized. Antarctic data indicate an increase in abundance in the SW Atlantic; significant declines in abundance in the SE Atlantic, Central Indian, E Australia and New Zealand zones; and no significant changes in trends in the SW Indian, SE Indian, Central Pacific, and SE Pacific divisions.

B-20664

Masaki, Y., **Japanese pelagic whaling and sighting in the Antarctic, 1974/75,** International Commission on Whaling. Report and papers of the Scientific Committee of the Commission, 1975, London, 1976, p.333-349, 3 refs.

F SH381.I484

The results of Japanese and USSR pelagic whaling efforts in the 1974/75 antarctic season are summarized. The data show changes in the catch per unit effort (CPUE) values for fin and sei whales since the 1968/69 season, the distances searched in miles, the number of whales sighted by scouting boats, and the total and average abundances of the various species sighted, by area and by year for the seasons 1965/66 to 1974/75.

B-20665
Holt, S.J., **Stock assessments of minke whales,** International Commission on Whaling. Report and papers of the Scientific Committee of the Commission, 1975, London, 1976, p.392-394.

F SH381.I484

Recent catch statistics of minke whales in Natal, Brazil, and the Antarctic are presented to illustrate important variations in sex ratio in this species. In the Antarctic, sex ratio differs according to season and area. The percentage of pregnant Antarctic-caught female minke whales is consistently much higher than in fin and sei whales, and changes in percent pregnant correspond with changes in mean size. It is recommended that minke stocks not be reduced to less than 3/4 of their estimated initial levels until better assessments are made of the peculiarities of sex selection and pregnancy rate, as well as the relation of weight to number.

B-20666
Japan progress report on whale research, June 1974 to May 1975, International Commission on Whaling. Report and papers of the Scientific Committee of the Commission, 1975, London, 1976, p.416-424, 16 refs.

F SH381.I484

Continuing studies of large whales, including prohibited whales and the minke whale in the Antarctic and North Pacific, are summarized. Data were collected on whale sighting and whale marking, and field and laboratory studies were conducted. Tabular data reflect sighting records of prohibited whales, the number of whales marked, and the number of marks recovered. The scouting distances are graphed and a list of publications is included.

B-20667
Soviet research on cetaceans during the seasons of 1974 and 1974-1975, International Commission on Whaling. Report and papers of the Scientific Committee of the Commission, 1975, London, 1976, p.438-443, 13 refs.

F SH381.I484

Soviet research on whales in the northern Pacific, the oceans of the southern hemisphere, and antarctic waters included studies of various aspects of whales aboard factory ships, whale marking, the recovery of seven foreign marks, observations of protected species and studies of the distribution of whales in the Pacific sector of the Antarctic. The data show that 2 pygmy right whales, 27 fin whales, 177 sei whales, 2 humpback whales, 25 minke whales and about 1250 sperm whales were recorded during the summer season of 1973-74 in this area.

B-20669
Brodskiĭ, K.A., **Phylogeny of the family Calanidae (Copepoda) on the basis of a comparative morphological analysis of its characters,** Geographical and seasonal variability of marine plankton, edited by Zh.A. Zvereva, Jerusalem, Israel Program for Scientific Translations, 1975, p.1-128, For Russian original see B-15406. Refs. p.123-128.

DAS,F QL121.A1A513 No.12(20)

All species of the family in the world fauna are examined. Comparative and functional-morphological methods have shown that certain morphological features (length and form of body, armature of first and fifth pairs of limbs, etc.) depend on the ecological conditions of the latitudinal zones. The structure of the genitalia is examined as a new criterion for the phylogenetic relationships within the family, and diverse types of genitalia are established for different zones. This analysis has yielded a phylogenetic scheme of the family according to chronological and spatial principles. In the new classification the family comprises the genus *Calanus* with the new subgenera *Tropocalanus* and *Carinocalanus* and the genus *Undinula*. The subgenera *Canthocalanus* and *Calanoides* are raised to genera. Diagnoses of the genera and subgenera and a key to species are given. A new species, *C. macrocarinatus*, is described. (Auth.)

B-20670
Shuvalov, V.S., **Geographical variability of some species of the family Oithonidae (Copepoda, Cyclopoida),** Geographical and seasonal variability of marine plankton, edited by Zh.A. Zvereva, Jerusalem, Israel Program for Scientific Translations, 1975, p.169-185, For Russian original see B-15407. Refs. p.183-185.

DAS,F QL121.A1A513 No.12(20)

The variability of the body size and of some morphological characters of three species, *Oithona similis*, *O. atlantica*, and *O. plumifera*, is examined on material from different parts of the World Ocean. There is considerable homogeneity of the size composition within some regions inhabited by a single population of *O. similis*. Considerable differences exist between the populations of different basins. Two groups are established: Atlantic-White Sea and Arctic-Sea of Okhotsk. The variability of *O. atlantica* in the North Atlantic follows a clinal pattern: size gradually decreases from north to south. This relationship is repeated in the southern hemisphere. Currents disturb this clinal pattern of variation. The variation of the body size of *O. plumifera* in the Tropical region has a small amplitude; on the other hand, the hairiness of the antennular setae, the basipodites of the swimming feet and the furcal rami varies considerably. (Auth.)

B-20671
Vyshkvartseva, N.V., **Structure of the mandibles in the genus *Calanus* s.l. in relation to latitudinal zonality,** Geographical and seasonal variability of marine plankton, edited by Zh.A. Zvereva, Jerusalem, Israel Program for Scientific Translations, 1975, p.186-199, For Russian original see B-15408. Refs. p.197-199.

DAS,F QL121.A1A513 No.12(20)

The structure of the masticatory edge of the mandibles was examined in 12 species of *Calanus* s.l. from different parts of the World Ocean. All species show an asymmetry of the form of teeth C1 and C2 on the left and right mandibles as well as of the width of the masticatory edge. Moreover, species of *Calanus* from different zoogeographic regions vary in the composition of the ventral group of teeth: the species of the high latitudes of the northern and southern hemispheres bear two ventral teeth, V1 and V2, whereas in the species which inhabit the southern temperate regions and both northern temperate regions, V2 is weakly developed or absent. The differences observed in the composition of the ventral group of teeth are correlated with differences in the composition of food in the different regions. Morphological specialization of the mandibles in the genus goes along with oligomerization of the number of teeth. (Auth.)

B-20672
Zvereva, Zh.A., **Seasonal changes of antarctic plankton in the Molodezhnaya and Mirny region,** Geographical and seasonal variability of marine plankton, edited by Zh.A. Zvereva, Jerusalem, Israel Program for Scientific Translations, 1975, p.248-262, For original Russian see B-15409. Refs. p.261-262.

DAS,F QL121.A1A513 No.12(20)

An analysis of the seasonal changes occurring in the Antarctic plankton was made on the basis of year-round collections by the Soviet stations Mirnyy and Molodezhnaya (in 1958 and 1965-1966). Two peaks of species diversity were established: in January-February and in September-October. On the whole, the plankton of the Mirnyy area is poorer in species than that of the Molodezhnaya area. The article contains a list of the copepod species (21) found at these stations and remarks on each species. (Auth.)

B-20680

Gruzov, E.N., **Antarctic marine biological research by divers** [Vodolaznye gidrobiologicheskie issledovaniia v Antarktike], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten'*, 1978 No.97, p.124-134, In Russian.

The results of marine biological studies carried out by divers are discussed. Such work has permitted a vertical and horizontal zonation scheme to be worked out along the coast. Zonation is very marked although it may vary from place to place, as it does along Enderby Land. Light has been shed on seasonal changes in biomass and species distribution by divers' work.

B-20714

Reindeer in the Antarctic, *Great Britain. Natural Environment Research Council. NERC news journal*, July 1978 2(6), p.4-6.

The adaptation of the two genetically distinct stocks of reindeer introduced to South Georgia has been studied. Adult males were found to live for only up to 7 yr, compared with 12 yr for females. Conceptions first occur at 1-1/2 yr of age. The pregnancy rate is vey high. Mortality among newborn calves is significant. Younger females are the most successful at rearing calves to weaning. Most adult males die in early winter after intense rut activity. In contrast, most females succumb in late winter when the winter food supply becomes critical. The coastal tussock grass, *Poa flabellata* is the major winter forage of reindeers in winter, while lichens and the burnet *Acaena magellanica* are foraged in summer. All species have been severely grazed.

B-20716

More about krill, *South African journal of science*, July 1978 74(7), p.239.

Recent USARP studies of krill have revealed that: contrary to previous beliefs, female krill do not die after spawning, but instead, shed their skins and continue feeding until the next spawning; krill lay an average of 2,000 to 3,000 eggs at a time, which is four or five times more than earlier theories; and the animals do not feed exclusively on phytoplankton, but also eat small animals and other krill. Further, differences found in the growth, respiratory patterns and temperature tolerance of krill in the Bransfield Strait and in the Bellingshausen Sea could indicate two different racial stocks or widely different age classes.

B-20729

Kamenev, V.M., **Silver-grey fulmar *(Fulmarus glacialoides)* of the Haswell Archipelago** [Serebristo-seryĭ burevestnik *(Fulmarus glacialoides)* arkhipelaga Khasuell], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten'*, 1978 No.98, p.76-82, In Russian. 9 refs.

The authors observed antarctic fulmars on the Haswell Islands during two summer seasons, 1965-66 and 1970-71. It is estimated that on Fulmar and Haswell Islands and in nearby areas they number around 10,000, which makes them the most numerous fulmar found there. Their nesting and breeding behavior, egg size and mortality of eggs and chicks, and other topics related to reproduction are discussed.

B-20731

Allen, K.R., **Analysis of the stock-recruitment relation in antarctic fin whales *(Balaenoptera physalus)***, *International Council for the Exploration of the Sea. Rapports et procès-verbaux des réunions*, July 1973 Vol.164, Fish stocks and recruitment, a symposium held in Aarhus, Denmark, July 1970, p.132-137, 5 refs.

DLC GC1.I66

The purpose of this paper is twofold: first, to discuss a technique for the estimation of recruitment rates from the age compositions of the catches taken from an exploited population; and secondly, to examine the evidence obtainable by this technique regarding the nature of the stock-recruitment relationship in southern hemisphere stocks of the fin whale *(Balaenoptera physalus)*. Analysis by the methods discussed in this paper thus indicates that the recruitment rate of the Antarctic fin whale population has remained fairly constant over the period from the early 1950's to the present time, during which the population has been reduced from about 70% to about 20% of the original size, and that previously the rate was about one-third higher. This result, if correct, suggests that the population-regulating mechanism for these animals does not operate through the processes affecting recruitment, i.e., reproduction and pre-recruitment natural mortality. This conclusion is somewhat surprising, particularly since some other evidence suggests that the reduction in population size may have been accompanied by reproductive changes which would tend to cause a compensating increase in the recruitment rate. (Auth. mod.)

B-20777

Barré, H., Mougin, J.L., Prévost, J., Van Beveren, M., **Bird ringing in the Crozet Archipelago, Kerguelen, New Amsterdam and St. Paul Islands,** *The Ring*, Jan.-Feb. 1976 8(86-87), p.1-16, 13 refs.

Bird-ringing results obtained in 1971-74 on Kerguelen and Crozet Is. and from 1957 to 1974 on New Amsterdam and St. Paul Is. are summarized. Ringing statistics and data on recoveries, migrations, and displacements are presented for the various families. The birds can be categorized as sedentary or migrating species. Long-distance migrators can be distinguished by birds having circumpolar dispersion and those whose dispersion is sectorial. In the subantarctic region the tendency to migrate far is much more strongly developed among immature birds than among adults, which are more sedentary. The average percentage of recoveries of all the species ringed at the three localities studied amounts to 0.6% (23,977 ringed, 152 recovered) and 1% if only the species which yielded recoveries (14,401 ringed, 152 recovered) are considered.

B-20785

Dartnall, H.J.G., **Antarctic freshwater rotifers,** *Ergebnisse der Limnologie*, Oct. 1977 No.8, p.240-242, 9 refs.

Studies of freshwater rotifers on Signy I. have revealed several unexpected results. Rotifers are far more abundant than had previously been thought. Thirty-six species were found. Bdelloids were not the dominant group, but were outnumbered by the Monogononta by a ratio of three-to-one. Further, the rotifers were far more numerous in the lakes than in the pools and were mainly benthic in habit. Twenty-eight species of rotifers were found in the lakes—six species of Bdelloidea and 22 of Monogononta. Eight species were found in the pools—five species of Monogononta and three of Bdelloidea. Association of swimming rotifers with the bottom appears to be an antarctic adaptation.

B-20791

Aguayo L., A., **Present status of the antarctic fur seal *Arctocephalus gazella* at South Shetland Islands,** *Polar record*, May 1978 19(119), p.167-173, 16 refs.

Observations of fur seals in the South Shetland Is. during 1901-1973 showed a significant increase in the number of fur seals on the islands, confirmed small breeding colonies at Elephant, Livingston, King George, Low, Snow, and Robert islands, and extended the distribution of *Arctocephalus gazella* to the west coast of the Antarctic Peninsula, to Palmer Archipelago. Results of observations made in the 1965-66 and 1972-73 seasons, using a direct method of counting, are discussed. It has been estimated that there were 3,000 animals on Elephant, Clarence and Cornwallis islands, and about, 6,000-7,000 for all the islands during the 1972-73 season. Pup survey data show

that the number of pups at Livingston I. has increased at a steady rate of about 34 per cent year from 1966 to 1973.

B-20794

Conservation of antarctic seals and birds, *Polar record,* May 1978 19(119), p.181, 3 refs.

The Convention for the Conservation of Antarctic Seals entered into force on Mar. 11, 1978. The convention was negotiated at a conference in London in Feb. 1972 and was open for signature on June 1, 1972. The states which signed the convention are listed with their dates of signature and ratification. The convention represents another significant step achieving effective conservation measures for antarctic wildlife.

B-20799

Life inside Martian rocks, *Bioscience,* Mar. 1978 28(3), p.232.

The recent discovery of microorganisms living inside rocks in the Dry Valleys of Antarctica, an area hitherto thought to be lifeless, has caused Viking specialists to rethink the design of their experiments on Mars, which has an environment similar to that of the Dry Valleys. The previous Viking missions were not equipped to break open rocks, but future probes of Mars may be designed to do just that.

B-20809

Mrochkov, K.A., Kiselev, V.I., **Chemical composition of body parts of the antarctic sperm whale** [Khimicheskiĭ sostav chasteĭ tela antarkticheskogo kashalota], *Rybnoe khoziaĭstvo,* Mar. 1972 No.3, p.67-70, In Russian.

Maximum, minimum and mean values are given for water content, fat, nitrogenous substances and mineral substances in antarctic sperm whales. For a number of organs and parts of the body these components are given as percentages of the organ's weight.

B-20819

Egorova, L.N., Kopylenko, L.R., Maslennikova, N.V., Sidorova, E.M., **Amino acid content of krill and krill meal** [Issledovanie aminokislotnogo sostava krilia i poluchennoĭ iz nego kormovoĭ muki], *Moscow. Vsesoiuznyĭ nauchno-issledovatel'skiĭ institut morskogo rybnogo khoziaĭstva i okeanografii. Trudy,* 1970 Vol.73, p.179-187, In Russian. 9 refs.

Studies of the amino acid content of proteins in krill, in macerated krill, in meal made from krill and meal made from macerated krill indicate that these products contain all essential and non-essential amino acids. Lysine and at times arginine were destroyed by the dehydration process. All other amino acids remained intact. Krill meal protein does not differ greatly in its amino acid composition from high-quality fish meal from Caspian sprats.

B-20820

Bottino, N.R., **Lipids of the antarctic sei whale *Balaenoptera borealis*,** *Lipids,* Jan. 1978 13(1), p.18-23, 25 refs.

The blubber, liver, and muscle of the antarctic sei whale were analyzed for total lipid content, composition of lipid by classes and positional distribution of fatty acids in individual lipids. The major glycerolipids (triglycerides, phosphatidylcholine, and phosphatidylethanolamine) were fractionated by silver nitrate thin layer chromatography. The phospholipid fractions were analyzed for fatty acid positional distribution. The whale stomach contained almost exclusively the amphipod *Parathemisto gaudichaudi.* Its lipids were also studied and compared with the lipids of the body tissues. The results indicate that the stomach content lipids are subjected to modifications before being deposited in the blubber, liver, and muscle. According to the silver nitrate thin layer chromatographic studies liver and blubber triglycerides resemble each other in their patterns of positional distribution of fatty acids and in molecular species composition. The phospholipids of liver and blubber also exhibited closely related fatty acid distribution patterns. In general, while the proportions of lipid classes and their predominant fatty acids varied from tissue to tissue, the patterns according to which the lipids had been synthesized seemed to be common. (Auth.)

B-20821

Prikhod'ko, I.I., Guliaev, V.N., Chesnokov, P.I., Bugrova, L.N., **Using dehydrated "Okean" protein paste in foods** [Ispol'zovanie v pitanii sushenoĭ belkovoĭ pasty "Okean"], *Konservnaia i ovoshchesushil'naia promyshlennost',* Aug. 1976 No.8, p.21-24, In Russian.

The nutritional values of krill paste, dehydrated for use as a food product, and of several soups made of different vegetables and krill meal are given. Other characteristics, such as durability, the amount of protein, fats, carbohydrates, and minerals, etc., are also discussed and illustrated.

B-20822

Permitin, IU.E., **Fecundity and reproductive biology of icefish (Chaenichthidae), fish of the family Muraenolepidae and dragonfish (Bathydraconidae) of the Scotia Sea (Antarctica),** *Journal of ichthyology,* 1973 13(2), p.204-215, Translated from Voprosy ikhtiologii. 8 refs.

An investigation has been made of the fecundity and reproductive biology of icefish, fish of the family Muraenolepidae, and dragonfish in the Scotia Sea. Icefish and dragonfish have an average level of absolute and relative egg production (thousands or tens of thousands of eggs), while fish of the family Muraenolepidae have a high level (hundreds of thousands of eggs). A definite correlation is noted between fecundity and the size and latitude of the ranges of these species. Several seasonally spawning groups of fish are distinguished in relation to the time of spawning. Differentiation of spawning depths is observed.

B-20825

Abe, T., Suzuki, M., **Notes on some fishes associated with the antarctic krill. 1. *Neopagetopsis ionah* Nybelin,** *Antarctic record,* Sep. 1978 No.62, p.23-28, 2 refs.

Specimens of the chaenichthyid fish *Neopagetopsis ionah* Nybelin were observed among the antarctic krill caught by fisheries research vessels in the Southern Ocean from Nov. 1976 to Mar. 1977, and from Nov. 1977 to Mar. 1978. Some of them have been collected for study. They measure ca. 150-200 mm in standard length and are all much smaller than the adult (measuring 500 mm in standard length) reported by Andriashev in 1960, which was caught in a trawl at a depth of 280 m. Results of the morphological and biological observations of the fish and chemical analysis of its flesh are given. (Auth.)

B-20831

Omori, M., **Zooplankton fisheries of the world: a review,** *Marine biology,* 1978 48(3), p.199-205, 27 refs.

About 20 species of zooplankters (copepods, mysids, euphausiids, sergestids, and Scyphomedusae) are commercially fished and utilized as food or feed today. The annual world catch of crustacean zooplankton is probably a little less than 210,000 tons and accounts for 11% of the total crustacean catch in the world. The present status of plankton harvesting in various parts of the world, including antarctic krill, is described. Problems in development of plankton fisheries are discussed. (Auth. mod.)

B-20834

Gambell, R., **Population biology and the management of whales,** *Applied biology,* 1976 Vol.1, p.247-343, Refs. p.336-343.

This treatment of whales outlines the history and regulation of whaling, makes a scientific assessment of whale stocks, delineates the stocks of each species, assesses the whale population, and discusses their migration, reproduction, age, growth, and management. Six species are discussed: blue, fin, sei, minke, humpback and sperm whales. It is concluded that despite certain gaps in the knowledge of stock identification and delineation, and the responses, both physiological and behavioral, of whales to abundance changes in their own stocks and in other species in the ecosystem, current understanding of the broad outlines of whale biology is sufficient to provide a basis for management which could restore the depleted stocks to their full productivity, and maintain those stocks which are still at or above their maximum or optimum sustainable yield levels. Ideal management requires unified control of all whaling activity throughout the world and the support of the best international research. It is important that depleted and presently protected species be monitored closely, and that commercial whale fisheries be intensively sampled and the data obtained supplemented by research activity directed outside the normal whaling grounds.

B-20835

De Villiers, A.F., **Littoral ecology of Marion and Prince Edward Islands (Southern Ocean),** *South African journal of antarctic research,* 1976 Suppl.1, 40p., 58 refs.

The shores of the volcanic islands Marion and Prince Edward are rocky and consist mainly of steep cliffs and beaches composed of boulders the sizes of which vary from a few centimetres to several metres in diameter. All the shores are exposed, those with a westerly aspect being severely so. Tidal range is 71 cm at springs, 21 cm at neaps. Swell heights on the east coast vary between 0 and 4 m. Gales, high humidity, abundant precipitation and relatively little fluctuation of temperature characterize the climate. Basic zonation on plane sloping rocky faces consists of a black lichen *(Verrucaria)* zone in the supra-littoral, a *Porphyra* zone in the mid and upper littoral, a kelp zone of *Durvillea antarctica* in the lower littoral, and a lower red zone of delicate rhodophytes in the upper sub-littoral. Five transects on different types of shore showed up departures from the basic pattern as a result of increased shelter, increased shade and decreased stability of substrate. The shallow sub-littoral is characterized by abundant corallines and other rhodophytes as well as phaeophytes of the genera *Desmarestia* and *Durvillea.* In parts large aggregations of the patellid *Nacella delesserti* were found. Pools are infrequent and biota in them vary with salinity. A wide variety of invertebrates are associated with the kelps *Macrocystis* and *Durvillea.* Trophic levels consist of primary producers and primary, secondary and tertiary consumers. (Auth. mod.)

B-20836

Cekalovic, K.,T., **Catalog of the Arachnida: Scorpiones, Pseudoscorpiones, Opiliones, Acari, Araneae and Solifugae of the twelfth region of Magellanic Chile, including antarctic Chile** [Catálogo de los *Arachnida: Scorpiones, Pseudoscorpiones, Opiliones, Acari, Araneae* y *Solifugae* de la XII Región de Chile, Magallanes incluyendo la Antártica Chilena (Chile)], *Gayana (Zoologia),* 1976 No.37, p.7-91, In Spanish with English summary. Refs.

A systematic catalogue of the Magellanic and Chilean antarctic *Arachnida,* including the orders: *Scorpiones, Pseudoscorpiones, Opiliones, Acari. Araneae* and *Solifugae* with 261 species, 156 genera and 69 families, is presented. A complete geographical distribution and a current bibliography of all the taxa is also presented. New records for one species of *Scorpiones,* two species of *Pseudoscorpiones,* four species of *Opiliones* and eleven species of *Araneae* collected during the past five years are added. (Auth.)

B-20837

Challies, C.N., **Feral pigs *(Sus scrofa)* on Auckland Island: status, and effects on vegetation and nesting sea birds,** *New Zealand journal of zoology,* Nov. 1975 2(4), p.479-490, 32 refs.

This paper describes the past and present status of feral pigs on subantarctic Auckland Island and their effects on the island's flora and fauna. It is based on historical records and a survey made during the summer of 1972-73. The pigs originate from a liberation at Port Ross in 1807. These animals thrived and increased in numbers, and by 1880 had spread throughout the island. They were numerous around Port Ross 33-45 years after their liberation but declined soon after, and may have died out locally. Since then pig densities at the northern end of the island have remained relatively low. When at high densities the pigs fed chiefly on the large-leaved species of *Pleurophyllum, Stilbocarpa,* and *Anisotome* and these have been virtually eliminated on accessible sites; it is likely that the pigs' impact on nesting sea bird populations was greatest at this time also. During the 1972-73 survey, pigs were found in the high country and along the coast at both ends of the island in comparably low numbers. Observations were made on the population, breeding success, and food habits of this population. The pigs appear to be no longer changing the island's vegetation or the numbers and distribution of nesting sea birds. If this population is left undisturbed, the present level of balance between the pigs and their modified environment should continue. (Auth.)

B-20838

Rudge, M.R., **Note on the food of feral pigs *(Sus scrofa)* of Auckland Island,** *New Zealand Ecological Society. Proceedings,* 1976 Vol.23, p.83-84, 2 refs.

The contents of faecal masses from pigs of Auckland I. were examined to obtain information on diet and feeding behavior. All faeces contained more than one food item and most contained inert material such as pebbles, wood, and peat. Tussock grasses and fine leaved grass occurred in all faeces. Peat mud, fibrous roots, tussock bases, and the tanned leaves and seed cases of *Dracophyllum* and rata occurred in 54% of the faeces. Animal remains (cat, pig, and prion feathers) occurred in 11 (85%) pf the samples. The vertebrate remains have been attributed to scavenging, but prions could have been taken by predation. Besides rooting, scavenging and predating, the pigs browsed on tussocks and possibly to a small extent on broad-leaved shrubs.

B-20839

Campbell, D.J., Rudge, M.R., **Case for controlling the distribution of the tree daisy *(Olearia lyallii)* Hook.f. in its type locality, Auckland Island,** *New Zealand Ecological Society. Proceedings,* 1976 Vol.23, p.109-115, 26 refs.

Olearia lyallii occurs on forested islands south of mainland New Zealand. It was apparently introduced accidentally to the Auckland Islands by sealers in the early 19th century. It is still spreading, but is not yet found beyond Port Ross, three of the Port Ross islands and the north-east shores of the main island. It supplants the dominant forest tree, *Metrosideros umbellata,* because it has greater tolerance to partial shade and salt spray; it grows faster and taller and is not browsed. *Olearia* forest is floristically simpler than *Metrosideros* forest. Seed can be dispersed by wind and possibly by visiting scientists. When the present juvenile plants mature, the rate of spread will increase. The potential impact of *Olearia lyallii* on the indigenous vegetation should be considered in the management plans for the reserve. (Auth.)

B-20841

Matile, L., **New apteran Sphaerocerid from the Crozet Islands** [Un nouveau Sphaeroceridae aptère de l'Archipel Crozet], *Société entomologique de France. Bulletin,* May-June 1975 80(5/6), p.173-176, In French. 1 ref.

A new genus, represented by one species, Dreuxiella spinosa from the Crozet Islands is described and illustrated.

B-20843

Burckle, L.H., Stanton, D., **Distribution of displaced antarctic diatoms in the Argentine Basin,** *Nova Hedwigia. Beihefte,* 1975 No.53, Symposium on Recent and Fossil Marine Diatoms, 3d, Kiel, 1974, p.283-292, 20 refs.

DSI, QK569.D54S9891

Displaced Antarctic diatoms at the sediment/water interface were studied in deep-sea cores taken from the Argentine Continental Slope and Rise as well as the abyssal floor. The object was to determine if the distribution of these diatoms in the sediment could be used to differentiate the flow regimes of the northward flowing Antarctic Bottom Water and the south flowing North Atlantic Deep Water. Antarctic diatoms are first encountered down slope at between 1,-000-1,500 fathoms depth. Maximum numbers of diatoms per gram of sediment occur on the Continental Rise and then drop off somewhat over the abyssal plain. The diatom barren zone in the upper Continental Slope is interpreted to be under the influence of the North Atlantic Deep Water, while the first appearance of Antarctic diatoms lower on the Slope likely marks the interface between this water mass and the underlying Antarctic Bottom Water. An important fallout of this study is the strong indication that some Antarctic Bottom Water enters the Argentine Basin by passing around the east end of the Falkland Fracture Zone. (Auth.)

B-20844

Mackintosh, N.A., **Biology of the populations of large whales,** *Science progress,* Winter 1972 60(240), p.449-464, 47 refs.

Studies of the population dynamics of the large whales are based on the statistics of catches and certain essential biological information. The migratory cycle of baleen whales, which breed in warm waters in winter and feed in cold waters in summer, is the key to their distribution and assists the identification of distinct 'stock units'. It also sets the rate of reproduction, normally at one birth per female every 2 years, though with a margin for variation. Sperm whales have a 4-year reproductive cycle; they are widely dispersed and more information is needed on their movements. Mortality rates and time scales are derived from age readings from the ear plugs of baleen whales and teeth of sperm whale. Modern whaling has reduced the total southern stocks of baleen whales to a fraction of their original numbers, and this must have an appreciable effect on the Antarctic ecosystem. (Auth.)

B-20852

Schultz, G.A., **Nonasellote isopod crustaceans from Anvers Island and other antarctic locations,** *American Geophysical Union. Antarctic research series,* Aug. 4, 1978 28(2), Biology of the antarctic seas VIII. Paper 2, p.21-41, 55 refs.

The nonasellote species of isopod crustaceans from Arthur Harbor, Anvers Island, are reviewed. Some nonasellote species taken during the U.S. Navy Antarctic Expedition of 1947-1948 from other locations are also included. Fifteen species, three new, are included, and maps of their distribution in antarctic waters were compiled. The locations of the collection sites of all species of Gnathiidae from antarctic waters, even those not represented by specimens in this paper, are mapped. From the distribution records of all species recorded here it would appear that there are enough records to show that most species are circumcontinental in distribution and that they are present from shallow to very deep water. Each isopod of the 15 species was considered in light of all known literature, and all known general biological data were also included. (Auth.)

B-20853

Deevey, G.B., **Taxonomic and distributional study of the planktonic ostracods collected on three cruises of the *Eltanin* in the South Pacific and the antarctic region of the South Pacific,** *American Geophysical Union. Antarctic research series,* Aug. 4, 1978 28(3), Biology of the antarctic seas VIII. Paper 3, p.43-70, 28 refs.

A general survey was made of the halocyprid ostracods collected on *Eltanin* cruises 14, 17, and 21, which covered a wide area of the South Pacific, from 95 to 160W and from the region of the Subtropical Convergence to 68S, well south of the Antarctic Convergence. Collections were made, primarily with Bè plankton samplers with fine-meshed nets (no coarser than 0.202-mm aperture), from the surface down to 2000m. The latitudinal and depth distributions of 48 species of ostracods were recorded, and two new species are described. Highest numbers of species were noted between the Subtropical and Antarctic convergences. Fourteen species were recorded south of 60S, and nine were taken at 68S. (Auth. mod.)

B-20854

Timm, R.W., **Marine nematodes of the order Desmoscolecida from McMurdo Sound, Antarctica,** *American Geophysical Union. Antarctic research series,* Sep. 8, 1978 26(5), Biology of the antarctic seas VI. Paper 5, p.225-236, 18 refs.

Two new genera and eight species, as well as seven previously known species, are described and illustrated. They were collected at Scott Base and Cape Royds, Ross Island. The new taxa are *Antarcticonema comicapitatum* n.g., n. sp., *Usarpnema auriculatum* n.g., n. sp., *Desmoscolex articulatus* n. sp., *Desmoscolex frigidus* n. sp., *Quadricoma avicapitata* n. sp., *Quadricoma curvicauda* n. sp., *Tricoma septentrionalis* n. sp., *Greeffiella antarctica* n. sp. (Auth.)

B-20855

Timm, R.W., **Redescription of the marine nematodes of Shackleton's British Antarctic Expedition of 1907-1909,** *American Geophysical Union. Antarctic research series,* Sep. 8, 1978 26(6), Biology of the antarctic seas VI. Paper 6, p.237-255, 33 refs.

Of the 25 new species collected by Shackleton's expedition and described by Cobb (1914), all have been redescribed and illustrated except *Spirinia septentrionalis* and *Euchromadora denticulata.* The following new combinations are made: *Cinctonema polare (= Terschellingia polaris), Pseudotheristus meridianus (= Monhystera meridiana), Chromadorella meridiana (= Chromadora meridiana), Prochromadorella polaris (= Chromadora polaris), Neochromadora (Neochromadora) edentata (= Spilophora edentata), Dichromadora antarctica (= Spilophora antarctica), Chromadora serrata (= Spilophora serrata), Hypodontolaimus septentrionalis (= Euchromadora septentrionalis), Anticyathus septentrionalis (= Laxus septentrionalis)* and *Deontostoma polare (= Thoracostoma polare).* (Auth.)

B-20867

Poulter, T.C., **Underwater vocalization and behavior of pinnipeds,** Behavior and physiology of pinnipeds, ed. by R.J. Harrison, et al., New York, Appleton-Century-Crofts, 1968, p.69-84, Refs. p.84.

DLC QL737.P6B4

This article is divided into the following sections: the sonar hypothesis; pinniped acoustics; vocalizations in air and water; vocalization and sex; nonvocal acoustics; recording of underwater signals; and intraspecies variations in vocalizations. Much of the work was

done with antarctic species and special attention is given to the problems inherent in using the very sensitive recording equipment that heavy ice cover permits by eliminating most background noise.

B-20868

Harrison, R.J., Kooyman, G.L., **General physiology of the Pinnipedia,** Behavior and physiology of pinnipeds, ed. by R.J. Harrison, et al., New York, Appleton-Century-Crofts, 1968, p.212-296, Refs. p.285-296.

DLC QL737.P6B4

The following aspects of pinniped physiology are discussed: diving performance; lungs and respiration; cardiovascular responses; functional aspects of the venous system; food and alimentary canal; water metabolism; adaptations in the integument; body temperature; characteristics of reproduction; endocrine organs; and nervous system. Throughout many references to antarctic seals are made.

B-20878

Bradford, J.M., **Sea ice organisms and their importance to the antarctic ecosystem (Review),** *New Zealand antarctic record,* 1978 1(2), p.43-50, 29 refs.

An attempt is made to bring together existing knowledge on ice communities and show how the microscopic plant community develops in the ice, the kinds of organisms (animal and plant) which contribute to the community, and their importance to the antarctic ecosystem. Living microalgae are incorporated continuously into the underside of the annual sea ice during its progressive formation. Different species of diatoms dominate the autumn and spring communities: *Nitzschia, Fragilariopsis* and flagellates are found in the autumn and into winter, whereas *Peridinium* appears in Aug. and *Amphiprora, Stephanopyxis, Nitzschia* and *Navicula* begin to increase between Oct. and Nov. According to Andriashev (1968) there is a strict ice fauna which lives at least temporarily in the ice and a sub-ice fauna whose members never enter directly into the loose ice, but are to some degree in trophic connection with the ice community. The ice fauna may consist of polychaete worms, copepods, amphipods, fingerlings of the fish *Trematomus borchgrevinki,* ciliates, and juveniles of the foram *Globigerina.* The sub-ice fauna consists of adult *Trematomus borchgrevinki,* the krill *Euphausia crystallorophias,* and at some times of the year *E. superba.*

B-20892

Weand, B.L., Hoehn, R.C., Parker, B.C., **Nutrient fluxes in Lake Bonney—a meromictic antarctic lake,** *Archiv für Hydrobiologie,* 1977 80(4), p.519-530, 14 refs.

B-20893

Stirling, I., **Regulation of numbers of an apparently isolated population of Weddell seals *(Leptonychotes weddelli),*** *Journal of mammalogy,* 1972 53(1), p.107-115, 22 refs.

A population of Weddell seals *(Leptonychotes weddelli)* at White Island on the McMurdo Ice Shelf, Antarctica, appears to be geographically isolated. Its origin is still uncertain but three explanatory theories are mentioned. The breeding and nonbreeding fractions of the population separate during pupping season (Oct. to mid-Dec.) and mix later as do their counterparts in eastern McMurdo Sound. Despite a greater reproductive potential, only two or three pups have been born annually for the past five summers. Natality clearly exceeds mortality of adults and subadults, but known survival of pups is of the same order as known mortality of adults and subadults. Censuses of seals visible on the sea ice in 1961 and 1968 were identical (11 seals), which also indicate stability in numbers of the population. The extreme fatness of all seals at White Island suggests that availability of food does not regulate numbers. Probably the availability of breathing holes in winter does. Intrasexual social strife between females also appears to lower the reproductive rate below its theoretical potential. (Auth.)

B-20894

Segonzac, M., **Recent data on the fauna of Saint Paul and New Amsterdam Islands** [Données récentes sur la faune des îles Saint-Paul et Nouvelle Amsterdam], *L'Oiseau et R.F.O.,* 1972 Vol.42(spec. no.), p.3-68, In French with English summary. Refs. p.65-68.

Following two visits to Saint-Paul and Nouvelle Amsterdam Islands, as complete an inventory as possible was made on the birds and mammals, those reproducing and those merely visiting these islands. After summarizing the existing data on the avifauna of the islands, studies were made of the measurements, breeding habits, reproductive cycles, mortality rates, and feeding habits for each species of birds. The results were compared whenever possible to material on birds of other localities, especially to the birds of Tristan da Cunha whose climatic, botanic and faunistic characteristics are very similar. Another chapter is concerned with an inventory of occasional birds and introduced mammals. Then follows a quick survey on the biomass of terrestrial vertebrates, which gives evidence on the destructive action of Man since his arrival on these islands, particularly in respect to the fur seals. In conclusion, the causes for the extreme scarcity of birdlife on Saint-Paul and Nouvelle Amsterdam Islands are analyzed. (Auth. mod.)

B-20895

Despin, B., **Preliminary note on the Gentoo penguin *Pygoscelis papua* of Possession Island (Crozet archipelago)** [Note préliminaire sur le Manchot papou *Pygoscelis papua* de l'île de la Possession (archipel Crozet)], *L'Oiseau et R.F.O.,* 1972 Vol.42(spec. no.), p.69-83, In French with English summary. 23 refs.

This note presents the results of observations made of the Gentoo penguin *Pygoscelis papua* during the breeding period which begins, on Possession Island, earlier than in other breeding localities. It deals with a climatological study, the breeding cycle's different phases, chick's growth and mortality. (Auth.)

B-20896

Mougin, J.L., **Continuous recording of internal temperatures of some *Spheniscidae* I. The Gentoo penguin *Pygoscelis papua* of Possession Island (Crozet archipelago)** [Enregistrements continus de températures internes chez quelques *Spheniscidae* I. Le Manchot papou *Pygoscelis papua* de l'île de la Possession (archipel Crozet)], *L'Oiseau et R.F.O.,* 1972 Vol.42(spec. no.), p.84-110, In French with English summary. 14 refs.

This note presents the results of continuous measurements of central and peripheral temperatures obtained on Gentoo penguins *Pygoscelis papua* on Possession Island (Crozet archipelago). Stomachal temperature is high: 39.8C, and quite constant, its variation ranging some degrees only. It shows no variation with the cooling power of the atmosphere. It varies with the length of the fast only if the birds' weight lowers considerably. On peripheral levels—foot and flippers—the temperature is lower and quite variable, sometimes more than 30 deg in the same point. It varies with the cooling power and with the birds' weight. Important variations of peripheral temperatures produce generally small variations of stomachal temperatures. Such mechanisms allow these temperatures to remain quite constant. Cooling power and birds' weight variations are counterbalanced by peripheral temperature variations and have no repercussions on stomach level. (Auth. mod.)

B-20897

Derenne, P., Prévost, J., Van Beveren, M., **Note on the ringing of birds in the Kerguelen archipelago since 1951** [Note sur le baguage des oiseaux dans l'archipel de Kerguelen depuis 1951], *L'Oiseau et R.F.O.*, 1972 Vol.42(spec. no.), p.111-129, In French with English summary. 9 refs.

The present study is a summary of the ringing operations carried out in the Kerguelen archipelago since 1951. These operations have been systematically led only since the year 1970 and by the end of the same year, 4,000 birds of 22 species had been banded. The limits of the investigated area are more or less Port-aux-Français and its surroundings, on the eastern part of the archipelago in which there are abundances of *Diomedea exulans* (827 ringed birds) and *Macronectes halli* (736 ringed birds). Small petrels there are not so numerous because of the many wild cats, so the banded birds are few. The controls effected in foreign countries or in the territory are mentioned as well as some biological data. (Auth. mod.)

B-20898

Bougaeff, S., **Preliminary note on some physiological data recorded on the Emperor penguin *(Aptenodytes forsteri)*** [Note préliminaire sur quelques données physiologiques enregistrées chez le Manchot empereur *(Aptenodytes forsteri)*], *L'Oiseau et R.F.O.*, 1972 Vol.42(spec. no.), p.131-145, In French with English summary. 9 refs.

During the 20th French Polar Expedition a series of recordings was made of physiological parameters on penguins: temperature and E.C.G. This paper presents the results of a preliminary analysis of average data collected on the Emperor penguin. According to the E.C.G. studied, it is possible to state that the heart rate increases during intense physical activity, as well as outside stimulation. On the other hand, variations in the environmental cooling power do not seem to affect it. Variations of stomach temperatures in terms of changes in the environmental cooling power have been observed, as well as changes due to the ingestion of snow. Subcutaneous measurements were done mainly on the limbs; they show that the flipper is the Emperor penguin's principal radiator. Convection is regulated, when the bird is standing, by the proximity of the upper side of the foot to the abdominal feathers. The importance of these postural adaptations in regard to the incubation of the egg and the protection of the newborn chick is emphasized. Finally, an example is shown of the E.C.G. record of a non-captive Emperor penguin taken by telemetry, pointing out technical problems encountered in Adélie Land. (Auth. mod.)

B-20900

Atlas, R.M., Di Menna, M.E., Cameron, R.E., **Ecological investigations of yeasts in antarctic soils,** *American Geophysical Union. Antarctic research series,* Nov. 13, 1978 30(2), Terrestrial biology III. Paper 2, p.27-34, 32 refs.

DLC QK615.5.A85

Yeasts were identified from antarctic soil samples. *Cryptococcus* and *Aureobasidium* were widely distributed and were found in the dry valleys. Fewer yeast species were identified from antarctic soils than have been reported previously from aquatic antarctic samples. In some antarctic soils yeasts were the dominant microbial populations. Yeasts from antarctic soils have adaptive features that would allow them to grow and survive under harsh antarctic conditions, but we did not identify 'unique' species of yeasts that do not occur in other regions. (Auth.)

B-20901

Johnson, R.M., Madden, J.M., Swafford, J.R., **Taxonomy of antarctic bacteria from soils and air primarily of the McMurdo Station and Victoria Land dry valleys region,** *American Geophysical Union. Antarctic research series,* Nov. 13, 1978 30(3), Terrestrial biology III. Paper 3, p.35-64, 43 refs.

DLC QK615.5.A85

A collection of some 500 bacteria isolated from the Antarctic are taxonomically characterized, and a key developed on the basis of their characteristics. Coryneform bacteria constitute the major group isolated. Gram-negative rods are relatively sparse. Three new species are described, and major physiological parameters are given for the isolated strains. An ecological distribution of genera by antarctic location is given, as well as evidence that endospore-forming bacteria are primarily isolated from air samples. (Auth.)

B-20903

Wardle, P., Moar, N.T., Given, D.R., Campbell, D.J., Rudge, M.R., **Goats on Auckland Islands,** *New Zealand journal of botany,* June 1978 16(2), p.291-296, 11 refs. Includes Reply by D.J. Campbell and M.R. Rudge.

Wardle, Moar and Given suggest that Rudge and Campbell (1977; B-19806) have written a useful paper on the influence of goats on the vegetation of the Auckland Is.; however, they take the view that the conservation value of the native biota far transcends the limited scientific interest that the goats present, and if the goats are indeed dying out slowly, they should be exterminated rather than risking an increase or spread through unforeseen circumstances. Campbell and Rudge describe the distribution of plants in the goat range and conclude that few plant species might in the future be eliminated by the goats. It is suggested that preoccupation with goats may distract attention from more serious dangers, i.e., the tree daisy *Olearia lyalli,* which shows far greater potential for changing the vegetation of the islands than do the goats.

B-20906

Webb, R., **Animals of the antarctic islands,** *Animals,* Oct. 1973 15(10), p.448-453.

DSI, 590.542A598

The author, having spent 18 mo on Signy I. carrying out research for the British Antarctic Survey, gives an illustrated account of various species of the vast numbers of sea birds, penguins, seals, and whales which breed among the islands fringing the Antarctic Continent. Brief mention is made of the pack ice zooplankton. It is noted that the Antarctic Treaty ensures the continued protection and conservation of the unique flora and fauna of Antarctica.

B-20908

Aguayo, A., Maturana C., R., Torres N., D., **Antarctic fur seal, *Arctocephalus gazella* (Peters), in the Chilean Antarctic (Pinnipedia—Otariidae)** [El lobo fino antártico, *Arctocephalus gazella* (Peters), en el Sector Antártico Chileno (Pinnipedia—Otariidae)], *Santiago de Chile. Instituto antártico chileno. Serie cientifica,* 1977 5(1), p.5-16, In Spanish with English summary. Refs. p.15-16.

Under the aegis of the Instituto Antártico Chileno, Universidad de Chile, and the Ministerio de Agricultura, and with the cooperation of the Armada de Chile, censuses of the antarctic fur seal, *Arctocephalus gazella,* were made along the entire littoral of the South Shetland Islands and in some coastal regions of the west coast of the Antarctic Peninsula during the summer seasons of 1965-66 and 1972-73. The total number of fur seals observed in the last census (1972-73) was about 4,383 animals, distributed mainly on Livingston, Low and King George Islands and on the Lajarte Islands (north coast of the Anvers Island Antarctic Peninsula). The Piloto Pardo Islands (Elephant,

Clarence and Cornwallis) were not included in this season's census; however, the number of *A. gazella* on these Islands was estimated at about 3,000 animals. The number of fur seals observed in the Chilean Antarctic Sector from the summer season 1901-02 to the summer season 1972-73 is summarized. The estimated total number of *A. gazella* in the South Shetland Islands was about 6,000-7,000 animals for the last season. Given also are a brief account of the history of the species, its taxonomy and some data on reproduction and diet. Data are also presented, which extend the southern distribution of *A. gazella* to 64 deg 20 min S. The importance of the euphausiids is noted and may explain the recent colonization by *A. gazella* of the South Shetland Islands and the west coast of the Antarctic Peninsula. From this, the hypothesis is advanced that the decline in Baleen Whale stocks from antarctic over-whaling has made more food (euphausiids-krill) available, and this led to expansion of the population and range of *A. gazella*. (Auth.)

B-20909

Hermosilla, J.G., **Contribution to the knowledge of dinoflagellates and tintinnids in the Antarctic. Pt. 2. Plankton collected in Foster Bay, December 1970** [Contribución al conocimiento de los dinoflagelados y tintínidos de la Antártica. Pt. 2. Plancton colectado a Bahía Foster, diciembre de 1970], *Santiago de Chile. Instituto antártico chileno. Serie cientifica,* 1977 5(1), p.17-34, In Spanish with English summary. 18 refs.

Dinoflagellates and tintinnids found in 21 surface and 21 depth samples collected in Dec. 1970, in Foster Bay, Deception Island, were studied. The results reveal the presence of 15 dinoflagellate species and 6 tintinnid species. On each of these morphological information is given. (Auth.)

B-20910

Etchegaray, J., Sáiz, F., Hajek, E.R., **Analysis of relationships among antarctic mesofauna and various climatic factors** [Análisis de las relaciones entre mesofauna antártica y algunos factores climáticos], *Santiago de Chile. Instituto antártico chileno. Serie cientifica,* 1977 5(1), p.35-44, In Spanish with English summary. 11 refs.

The paper reports the relative abundance, distribution and specific diversity of edaphic mesofauna in relation with soil temperature. Research was carried out on Robert Island, Copper Mine Peninsula (South Shetlands), on an altitudinal transect from the shore to 150 m inland. Along the transect three macroclimatic stations and 8 biological sampling stations were located. Samples were taken every 5 days in three layers in moss and soil and the fauna was separated with Berlesse funnels. Density of mesofauna presents a clear stratification with higher percentages at the superficial moss layer. Collembola (98.8%) is the dominant group of the mesofauna, whereas Acari represented only 1.2 %. The two groups exhibit different patterns of distribution along the transect. Collembola was predominantly found in the lower, warmer and wetter stations, while Acari was found in drier, higher and colder areas. (Auth.)

B-20911

Moreno, C.A., Zamorano, J.H., Duarte, W.E., **Distribution and spatial segregation of fish populations in South Bay, Doumer Island, Antarctic** [Distribución y segregación espacial de las poblaciónes de peces en bahía South (Isla Doumer, Antártica)], *Santiago de Chile. Instituto antártico chileno. Serie cientifica,* 1977 5(1), p.45-58, In Spanish with English summary. Refs. p.57-58.

The vertical and local distribution of coastal benthonic fish populations was studied at South Bay, Doumer Island, Palmer Archipelago, in relation to the habitats found in the marine bottom substrate. The populations were separated according to their habitat preference utilizing three different methods: a) analysis of vertical distribution, b) analysis of relative density and c) analysis of geographic microdistribution, a measure of similarity in appearance of 43 sampling stations utilized in the summers of 1972, 1973, 1976 and 1977. The three methods gave similar results, which permitted the grouping of similar species: one group that congregates the fishes of the algal belt and the other congregates the fishes of the sponge community. When these results were compared with the literature, it was concluded that the same species occupy similar habitats in very different places around Antarctica. The probable ecological isolation of 4 congeneric species is discussed according to microhabitat within the algal belt from the observations taken while scuba diving. (Auth.)

B-20912

Jaramillo, E., ***Aega antarctica* Hodgson and *Plakarthrium typicum* Chilton in South Bay, Chilean Antarctic (Crustacea, Isopoda)** [*Aega antarctica* Hodgson y *Plakarthrium typicum* Chilton, en bahía South, Antartica Chilena. (Crustacea, Isopoda)], *Santiago de Chile. Instituto antártico chileno. Serie cientifica,* 1977 5(1), p.59-64, In Spanish with English summary. 14 refs.

Presence of *Plakarthrium typicum* Chilton is mentioned for the first time in antarctic waters. Previously, the species was known only from New Zealand. *Aega antarctica* Hodgson is registered for the first time as fish-ectoparasite: of *Notothenia gibberifrons* Lonnberg. (Auth.)

B-20913

Redon F., J., Quilhot P., W., **Lichens of Navarino Island. Pt. 1. Preliminary systematic and ecological study** [Los líquenes de isla Navarino. Pt. 1. Estudio sistemático y ecológico preliminar], *Santiago de Chile. Instituto antártico chileno. Serie cientifica,* 1977 5(1), p.65-79, In Spanish with English summary. 22 refs.

A preliminary account is presented on the lichen flora of Navarino Island (Magallanes Province, Chile). The results given are: 1) a list of the 56 lichen species; 2) a vegetational profile between Ukika beach (0 m) and a mountain (600 m) south of Ukika; 3) a discussion about the phytogeographical relations on this lichen flora, specially in connection with the antarctic lichen flora; 4) a review of the most typical communities. (Auth.)

B-20914

Pizarro, C., Sáiz, F., **Musci taxocenosis of the Fildes Peninsula (King George Island, South Shetland Islands)** [Estudio de la taxocenosis muscinal de la península Fildes (isla Rey Jorge, Shetland del Sur)], *Santiago de Chile. Instituto antártico chileno. Serie cientifica,* 1977 5(1), p.81-96, In Spanish with English summary. Refs. p.95-96.

Twenty-eight musci species (Bryophyta) distributed in 16 genera from Peninsula Fildes (King George Island, South Shetland Islands) are analyzed both qualitatively and quantitatively, considering their dependence on altitude and diversity of substrate, exposition and slope. The following parameters, measured by the indexes indicated in parenthesis, were considered: relative abundance, spatial constancy, affinity (Jaccard and Winer), diversity (Shannon), uniformity (Pielou) and overlap (Horn). It is concluded that the soil's substrate and the northern exposition increase the complexity of the muscinal taxocenosis, and the whole rock substrate clearly defines a taxonomic and biocenotic uniformity of musci. Five species are the most important, from an ecological point of view: *Drepanocladus uncinatus, Andreaea gainii, Tortula excelsa, Grimmia antarctica* and *Polytrichastrum alpinum*. Six nuclei of species with a high degree of affinity appear clearly defined. (Auth.)

B-20915

Leech, O.J., **Islands in the wind,** *Wildlife (London),* Aug. 8, 1977 19(8), p.356-361.

DSI S960.A598

This illustrated account treats the Falkland Islands, with emphasis on birdlife. Also described are the islands' physiographic features, climate, vegetation, and animal life. Sixty-two species of bird and three kinds of seal breed in the Falklands. Introduced species include silver foxes, rats, mice, and cats. The seas around the Falklands provide rich feeding grounds for the penguins, petrels and albatrosses which thrive on the plentiful lobster-krill in these waters. Seals and dolphins are common, and there have been frequent sightings of killer whales. Two Ordinances passed by the Government provide for the protection of most Falkland birds throughout the year and for the establishment of nature reserves and sanctuaries.

B-20918

Simpson, G.G., **Early mammals in South America: fact, controversy, and mystery,** *American Philosophical Society. Proceedings.* Oct. 19, 1978 122(5), p.318-328, Refs. p.327-328.

This paper discusses the nature and origin of the earliest known mammalian faunas of South America. The facts actually known concern especially fossils from the late Cretaceous and from the two earliest established land mammal ages of South America, in modern terminology the Riochican and the Casamayoran, now believed to be approximately the late Paleocene and early Eocene, respectively. It is suggested that the most likely hypothesis for the deployment of marsupials is that the early dispersal of these mammals involved North America, South America, Antarctica, and Australia. They probably originated on one of the four continents in question. It is possible that the Xenarthra originated in Middle America, then a part of North America, or in South America itself. Origin in Africa or Antarctica is possible, but at present seems very improbable. Condylarthra might have arisen on any continent except Antarctica plus Australia.

B-20925

Adrian, M., **Wildlife in the Antarctic,** New York, Julian Messner, 1978, 64p.

DLC QL106.A37

This is a book to introduce the elementary-school-age child to the habits, ecology, biology of penguins, elephant, leopard and Weddell seals, and blue whales. Antarctica is described briefly and a chapter devoted to the problems of conservation of this unique ecosystem.

B-20926

Powell, A.W.B., **Antarctic mollusca,** *Poirieria,* Aug. 1971 6(1), p.15-21, 1 ref.

DLC QL401.P6

Surveyed here are the mollusc species found in waters around Antarctica, the Falkland Islands, South Georgia, Kerguelen and Macquarie Islands. Some hypotheses to account for bipolarity of some species are advanced.

B-20927

Ho, C.Y.-K., Prager, E.M., Wilson, A.C., Osuga, D.T., Feeney, R.E., **Penguin evolution: protein comparisons demonstrate phylogenetic relationship to flying aquatic birds,** *Journal of molecular evolution,* 1976 8(3), p.271-282, Refs. p.280-282.

Quantitative immunological comparisons of three avian proteins, transferrin, ovalbumin, and penalbumin, indicate that penguins are phylogenetically most closely related to loons, albatrosses, herons, and grebes. These data support the theory that the ancestors of penguins were flying oceanic birds and that flightlessness in penguins has evolved independently from flightlessness in ratites. (Auth.)

B-20928

Lockyer, C., **Age at sexual maturity of the southern fin whale (Balaenoptera physalus) using annual layer counts in the ear plug,** *International Council for the Exploration of the Sea. Journal,* Mar. 1972 34(2), p.276-294, Refs. p.292-294.

DLC GC1.I64

The ear plug core from the external auditory meatus of fin whales contains growth layers which are all revealed when the core is cut down longitudinally to the central axis. One layer which represents a year's growth, consists of a dark keratinized lamina and a pale fatty lamina. All layers persist throughout life and are continually formed at the proximal end and so are a reliable means of determining age. In analyses of age at sexual maturity for fin whales taken within the longitudinal sector 0-60 deg W in the southern oceans several factors have been considered and different methods compared. The ear plug layer formation during the juvenile growth phase is very irregular and the layers are unevenly spaced. After maturity the new layers become more compact and evenly spaced and minor laminae are rarely present. The point of development of sexual maturity is clearly seen in the change in layer patterns of the ear plug and provides a means for determining age at sexual maturity in mature animals. The presence of histochemically different layers is probably the indirect result of seasonal feeding, migratory, and sexual habits, with hormonal cycles having a direct influence. The minor laminae and irregularities present in the juvenile phase of ear plug growth are possibly the result of the erratic feeding and migratory habits characteristic of immature whales. (Auth. mod.)

B-20930

Therezien, Y., Couté, A., **Freshwater algae from Crozet and Kerguelen Islands (excluding diatoms). 2. Examination of specimens taken in 1973 and 1974** [Algues d'eau douce des îles Kerguelen et Crozet (à l'exclusion des diatomées). 2. Examen des récoltes effectuées en 1973 et 1974], *Comité national français des recherches antarctiques. CNFRA,* 1977 No.43, 91p. + 19 plates, In French with English summary. Refs. p.87-90.

Three hundred sixty-one fresh-water algae taxa are described. Desmids are predominant with 118 different taxa, followed by Chlorococcales (87) and Cyanophyceae (85). Sixteen new species, varieties and formae in the genera *Coleodesmiun, Anabaena, Golenkiniopsis, Scenedesmus, Pediastrum, Zygogonium, Spirogyra, Cylindrocystis, Gonatozygon, Cosmarium, Staurodesmus* and *Staurastrum* are proposed. Austral islands endemism seems limited to the 16 new taxa. The floristic composition is very similar to that of arctic islands. (Auth.)

B-20937

Ackley, S.F., Taguchi, S., Buck, K.R., **Primary productivity in sea ice of the Weddell region,** *U.S. Army Cold Regions Research and Engineering Laboratory,* CR 78-19, July 1978, 17p., ADA-059 344, 24 refs.

Physical and biological measurements were made of sea ice cores taken from 68S to 78S in the Weddell Sea. Fluorescence measurements indicated an algal community that was strongly associated with salinity maxima within the ice. Maximum concentration of chlorophyll *a* ranged from 0.306 to 4.54 mg/stere. Comparisons with the water column standing crop indicated that the standing crop within the ice represents a minor but significant percentage of the total standing crop for the region. The ice algal community is apparently distinct from others that have been described for land-fast ice in McMurdo Sound, sea ice in the Arctic and pack ice off East Antarctica. The highest concentrations of biological material are found in the bottom or top of the sample in those regions, whereas the Weddell Sea samples are concentrated at intermediate depths (.65 m to 2.15 m) within the ice. A qualitative model indicating the relationship be-

tween thermally-induced brine migration and subsequent algae growth is presented. This model indicates the distribution of algae within the ice is dependent on the unique thermal and physical setting for Weddell Sea pack ice where brine drainage processes are initiated by spring and summer warming, but are not carried through as completely as in other regions. (Auth.)

B-20943

Sakasai, N., Hayashi, K., Nakajima, G., Saito, N., Shiba, M., **Convenient assay method for protease of the antarctic krill using paper disks,** *Japanese Society of Scientific Fisheries. Bulletin (Nihon suisangakkai),* 1978 44(6), p.673-675, In Japanese with English summary. 1 ref.

A convenient assay method for protease of the Antarctic Krill, which is well suited for measurements on a ship, is proposed. A paper disk (diameter: 8mm) containing extracted juice of a krill sample was put on 10ml casein-agar plate (1.5% agar 0.4% casein, 0.1M phosphate buffer, pH 7.0) and kept at 30C for a definite time. The diameter (mm) of the clear halo which appeared after the treatment of the plate with 5% trichloroacetic acid was measured. In order to calculate the proteolytic activity of krill samples, the solution of pancreatin of known activity was used as a reference standard. The relationship between the logarithm of the enzyme concentration and the diameter of the halo was definitely linear. (Auth.)

B-20959

Fontugne, M., Duplessy, J.C., **Carbon isotope ratio of marine plankton related to surface water masses,** *Earth and planetary science letters,* Nov. 1978 41(3), p.365-371, 23 refs.

Sackett et al (E-16452) concluded from a study of organic carbon in recent sediments that marine plankton south of the Antarctic Convergence show carbon isotopic variations which are related to the seawater temperature, while at lower latitudes the plankton delta C-13 is nearly constant at -20 per mill. Presented here are carbon isotopic measurements on plankton samples from the Indian Ocean, extending the results of Sackett et al to the warm surface waters. Carbon isotopic ratios of plankton organic tissue present no linear relationship with seawater temperature, salinity or CO2 partial pressure, such as reported for phytoplankton cultures and previous studies of natural plankton delta C-13 variations. However, the isotopic composition of plankton organic carbon is characteristic of a well-defined surface water mass and changes from one water mass to another, recording hydrologic discontinuities. (Auth. mod.)

B-20965

Fischer, W., **Diurnal migration of antarctic krill** [Tagesperiodische Wanderungen des Antarktischen Krill], *Informationen für die Fischwirtschaft,* 1976 23(3), p.90-92, In German. 3 refs.

During the first and second parts of the antarctic krill expedition to the South Atlantic in 1975-1976, observations on vertical distribution of *Euphausia superba* Dana were performed by means of high frequency soundings. Most of the krill was found in the 10-50 m depth range, much less in the 0-10 m layer. Russian findings of a diurnal rhythm in vertical distribution could not be confirmed.

B-20969

Koops, H., Tiews, K., Beck, H., Gropp, J., **Fermented alkane and krill meal as a fish meal substitute in trout fodder** [Ersatz von Fischmehl durch Alkanhefe und Krillmehl im Forellenfutter], *Informationen für die Fischwirtschaft,* 1977 24(1), p.21-22, In German.

Studies on fodder for trout in ponds includes krill meal as a part of protein nutrients. Ratio and chemical composition of the fodder are discussed.

B-20971

Schreiber, W., Papajewski, H., Christians, O., **Quality and tastiness of antarctic fish** [Fleischqualität und Genusswert antarktischer Fische], *Informationen für die Fischwirtschaft,* 1977 24(3/4), p.117-120, In German. 3 refs.

Fish caught in the 1975-1976 season by the German Antarctic Expedition were tasted by personnel on board the research vessels and found satisfactory. Results are tabulated by method of preparation, freshness of the fish, and regional origin and habits of the tasters.

B-20975

Fischer, W., **Stock estimation of krill in the Atlantic sector of the Antarctic by vertical sounding** [Lottechnische Bestandsaufnahme von Krill im atlantischen Sektor der Antarktis], *Informationen für die Fischwirtschaft,* 1977 24(5), (6), p.176-180, 233-234, In German. 7 refs.

A review is given of observations on vertical distribution of krill in the South Atlantic Ocean during three parts of the German Antarctic Expedition in 1975-1976. Maps show routes, catch locations and amounts of catch. Areas west of the tip of the Antarctic Peninsula proved to be richest in krill, with the areas around the South Orkney Islands and South Georgia in second and third place. The distribution pattern is believed to be basically constant from year to year.

B-20977

Christians, O., Leinemann, M., **Preliminary investigation of the effect of green stomach content of krill on the quality of cooked krill paste** [Vorläufige Untersuchungen über den Einfluss des grünen Mageninhalts beim Krill auf verschiedene Eigenschaften der Kochkrillfarce], *Informationen für die Fischwirtschaft,* 1977 24(5), p.182-185, In German. 2 refs.

Krill paste made of *Euphausia superba* Dana caught by the German Antarctic Expedition in 1975-1976 was examined for effect of green stomach content on the taste of the paste. Results show that not only the sweet-bitter taste of the stomach content affects the quality of the paste, but also fat content, method of cooking, and time and conditions of storage.

B-20978

Novitsky, J.A., Morita, R.Y., **Starvation-induced barotolerance as a survival mechanism of a psychrophilic marine vibrio in the waters of the Antarctic Convergence,** *Marine biology,* 1978 49(1), p.7-10, 8 refs.

Ant-300, a psychrophilic marine vibrio isolated from the Antarctic convergence, was tested for survival under conditions simulating those expected *in situ* for this organism. In particular, the organism's response to increased hydrostatic pressure was examined. Under a hydrostatic pressure of 250 atm, the viability of Ant-300 was reduced over 75% in growth media and under starvation conditions after 3 and 2 days, respectively. However, if the cells were starved for 1 week prior to pressurization of the starving suspension, 100% viability was maintained for over 6 weeks at the same pressure. After 10 weeks, the viability of a population of cells suspended for 1 week in natural or artificial seawater at a density of 1,000/ml cells prior to pressurization of the suspension was 2 to 3 times greater than 1 atm controls. The data indicate that starvation conditions are a contributory if not the primary factor for the barotolerance of this organism in antarctic waters. The data also indicate that under certain conditions, not unlike those expected *in situ,* hydrostatic pressure actually increases the survival of this organism under low nutrient conditions. (Auth.)

B-20992
Novitsky, J.A., Morita, R.Y., **Morphological characterization of small cells resulting from nutrient starvation of a psychrophilic marine vibrio,** *Applied and environmental microbiology,* Oct. 1976 32(4), p.617-622, 18 refs.

Upon starvation, Ant-300, a psychrophilic marine vibrio, isolated from the Antarctic Convergence, was observed to decrease in size and change in shape from a rod to a coccus. After 3 weeks of starvation, 50% of the starved population was able to pass through a filter with a pore size of 0.4 microns. Electron microscopy of thin sections of the small cells revealed normal cell structure except for an enlarged periplasmic space. When inoculated into a fresh medium, small starved cells grew without a significant lag and regained "normal" size and shape within 48 h. (Auth.)

B-20993
Novitsky, J.A., Morita, R.Y., **Survival of a psychrophilic marine vibrio under long-term nutrient starvation,** *Applied and environmental microbiology,* Mar. 1977 33(3), p.635-641, 33 refs.

Ant-300, a psychrophilic marine vibrio isolated from the surface water of the Antarctic Convergence, was starved for periods of more than 1 year. During the first week of starvation, cell numbers increased from 100 to 800% of the initial number of cells. Fifty percent of the starved cells remained viable for 6 or 7 weeks, while a portion of the population remained viable for more than 1 year. During the first 2 days of starvation, the endogenous respiration of the cells decreased over 80%. After 7 days, respiration had been reduced to 0.0071% total carbon respired per hour and remained constant thereafter. After 6 weeks of starvation, 46% of the cellular deoxyribonucleic acid had been degraded. Observation of the cellular deoxyribonucleic acid with Feulgen staining before starvation showed the average number of nuclear bodies per cell varied from 1.44 to 4.02, depending on the age of the culture. A linear relationship was found between the number of nuclear bodies per cell and the increase in cell numbers upon starvation. The data suggest that Ant-300 is capable of surviving long periods of time with little or no nutrients, and is therefore well adapted for the sparse nutrient conditions of the colder portions of the open ocean. (Auth.)

B-20994
Rounsevell, D.E., **Populations of introduced arthropods at Australian antarctic stations,** *Pacific insects,* Sep. 25, 1978 18(3-4), p.199-202, 13 refs.

Populations of a beetle *(Lathridius nodifer),* a mite *(Haemogamasus pontiger)* and a dipteran, presumably introduced from Australia, were found in heated buildings at Australian antarctic stations where they lived for at least 11 months. Direct evidence of breeding was obtained only for the mite population. A brief discussion is presented on the history of introductions which have occurred and the potential consequences of future introductions of arthropods to the Antarctic by man. (Auth.)

B-20995
Tenorio, J.M., Beatty, J.A., **Catalog of entomological types in the Bishop Museum,** *Pacific insects,* Sep. 25, 1978 18(3-4), p.203-214, 15 refs.

This catalog lists and provides relevant information for the primary types of 75 species and the correlated allotypes of 14 species of spiders (Araneae) deposited in the Bishop Museum. A brief description of the nature of holdings in the general spider collection is also given. The specimens derive primarily from the Pacific Basin, including the Papuan subregion, SE Asia and the antarctic islands. (Auth. mod.)

B-21010
Antezana, T., Aguirre, N., Bustamante, R., **New northern limit for antarctic krill, *Euphausia superba* Dana, in the Pacific (Crustacea, Zooplankton)** [Nuevo limite septentrional para el krill antártico *Euphausia superba* Dana, en el Pacifico (Crustacea, Zooplancton)], *Instituto Antártico Chileno. Serie cientifica,* 1976 4(1), p.47-51, In Spanish with English summary. 14 refs.

The Antarctic krill *Euphausia superba* is recorded for the first time outside the Antarctic Convergence in the fjord region of southern Chile (approx. at 50S). The encountered juveniles are supposedly expatriates from an antarctic population, having reached this northernmost location through a combined effect of ontogenic migration and water mass circulation. (Auth.)

B-21011
Antezana, T., Aguirre, N., Bustamante, R., **Illustrated key and latitudinal distribution of antarctic euphausiids (Crustacea, Zooplankton)** [Clave ilustrada y distribución latitudinal de los eufáusidos del oceano antártico (Crustacea, Zooplancton)], *Instituto Antártico Chileno. Serie cientifica,* 1976 4(1), p.53-68, In Spanish with English summary. 14 refs.

A bilingual key for the Antarctic Ocean euphausiids (antarctic and subantarctic water) is presented here, along with illustrations of diagnostic features for each given species. A generalized diagram of the latitudinal distribution as related to the oceanographic barriers of the Southern Ocean is also given, particularly for the Pacific sector. (Auth.)

B-21012
Schlatter, R.P., Moreno, C.A., **Feeding habits of the blue-eyed shag, *Phalacrocorax atriceps bransfieldensis* (Murphy) on Green Island, Antarctica** [Habitos alimentarios del cormoran antártico, *Phalacrocorax atriceps bransfieldensis* (Murphy) en isla Green, Antártica], *Instituto Antártico Chileno. Serie cientifica,* 1976 4(1), p.69-88, In Spanish with English summary. Refs. p.86-88.

The diet of the blue-eyed shag, *(Phalacrocorax atriceps bransfieldensis)* was studied, based upon remains and pellets ejected by that species' colony at Green Island, Antarctic Peninsula. This cormorant consumes preferably juvenile Notothenid fishes and Cephalopoda; minor food items were pelagic and bentho-littoral Crustaceans. The advantage and disadvantage of pellets for food habit studies, the presence of stones in those castings, and the role plus trophic relations of the blue-eyed shag in the antarctic marine ecosystem are discussed. (Auth.)

B-21013
Retamal R., M.A., **Contribution to the knowledge of antarctic decapods** [Contribución al conocimiento de los Crustacea Decapoda antárticos], *Instituto Antártico Chileno. Serie cientifica,* 1976 4(1), p.89-94, In Spanish with English summary. 8 refs.

This note deals with two species of Crustacea Decapoda collected during the 25th, 27th and 29th Chilean Antarctic Expeditions. These Caridea were obtained from benthic stations located in bays of the South Shetland Islands. The material includes two species: *Notocrangon antarcticus* (Pfeffer, 1887) and *Chorismus antarcticus* (Pfeffer, 1887). (Auth.)

B-21015
Werdal, P.J., **Report on Japanese Antarctic Whaling Expedition, 1974-1975, by the No.2 *Tonan Maru*,** Washington, D.C., National Oceanic and Atmospheric Administration, [1975], 125p., Unpublished manuscript.

The author's duties as a guest aboard the Japanese whaling vessel No.2 *Tonan Maru* were to collect biological data on the whales taken, observe whaling operations, and note any infractions of the International Whaling Commission regulations that might occur. The topics discussed include the fleet, quotas, the I.W.C. observer and J.F.A. inspectors, catch procedure, catch utilization, sampling procedure, biological data, and violations noted.

B-21016
McIntyre, T.J., **Report of the American guest aboard the whaling factoryship No.2 *Tonan Maru,* AW 30 1975/76,** Washington, D.C., National Oceanic and Atmospheric Administration, [1976], 35p., Unpublished manuscript.

The author describes his experiences and observations as an invited guest to the Antarctic Whaling Expedition No. 30 of the Nippon Suisan Co., Ltd., aboard the whaling factory ship *Tonan Maru.* The expedition consisted of mothership No.2 *Tonan Maru,* five catchers, two scout catchers, and the refrigerator vessel *Nojima Maru.* The report gives the areas visited and their quotas; historical notes on Japanese whaling; hunting, catching, flensing, and processing procedures; catch details; and IWC and Japanese whale fishery regulations, and discusses the biological parameters and resource management of whales. The author's special interests focused on sighting and photographing smaller cetaceans, particularly minke whales, and maintaining a log of bird observations, noting species and approximate numbers. Tissue samples, to be frozen, were also taken from 25 minkes, 10 sei, and 10 fin whales. Collections were made of baleen plates, small sized fetuses from minke and sperm whales, and some pathologic and parasite specimens. The highlight of the specimens is the complete skull of a large female minke. The materials will be deposited in the Smithsonian Institution.

B-21027
Brown, S.G., **Whale marking: a short review,** Voyage of discovery, edited by M. Angel, Oxford, Pergamon Press, 1977, p.569-581, 49 refs.

DLC GC26.V68 1977

Statistics are presented for large whales marked with Discovery-type marks in the Antarctic and other regions to the end of 1975, with a few exceptions. The largest numbers have been marked in the Antarctic in the pre-war and post-war years, and in the North Pacific. Fin (34%), humpback (22%), and sperm whales (30%) account for 86% of the total of 20,573 whales marked. The Discovery mark has provided much information on the movements and migrations of some species, some information on longevity, and important checks on methods of age determination. It has also been used in estimating population sizes, exploitation rates, and fishing mortality coefficients. It is, however, an internal mark and its return depends on the death of the whale. The reduction in catches of some species and the total protection of others has led to a decline in the numbers of marks returned, and therefore of the amount of information available. Attention has recently been turned to the development of an externally visible mark.

B-21028
Gambell, R., **Dentinal layer formation in sperm whale teeth,** Voyage of discovery, edited by M. Angel, Oxford, Pergamon Press, 1977, p.583-590, 13 refs.

DLC GC26.V68 1977

The sperm whale teeth are made up largely of dentine, which is laid down in alternating translucent and opaque laminae on the pulp cavity edge of the tooth. Earlier studies on the nature of this edge showed that the translucent lamina is deposited in late winter and spring in sperm whales of both sexes on the east and west coasts of South Africa, and in the summer months in male sperm whales in the Antarctic. New investigations into the timing of lamina formation in sperm whales from Western Australia, using acid digested tooth samples, showed that in this area the translucent lamina was laid down at different times in the two sexes. The female whales were similar to the South African animals, forming this lamina in late winter and spring. The incidence of the newly formed translucent lamina reaches a peak in the males in summer, as in the antarctic male sperm whales. The antarctic and Western Australian male sperm whales are similar to each other but have a generally older age distribution than the males off South Africa. It appears that different population groups may have different times of lamina formation in the dentine of their teeth. However, only one pair of translucent and opaque laminae, constituting a growth layer, is deposited each year in the teeth of sperm whales in the southern hemisphere. (Auth.)

B-21029
Lockyer, C., **Observations on diving behaviour of the sperm whale *Physeter catodon*,** Voyage of discovery, edited by M. Angel, Oxford, Pergamon Press, 1977, p.591-609, 20 refs.

DLC GC26.V68 1977

Observations, made from ships, on diving behavior of sperm whales, are analyzed for different sizes of animals and compared with Kooyman's observations of the Weddell seal. Depth, duration, descent and ascent rates, respiratory rhythm and social groupings are all considered. During chasing, most sperm whales dive for periods less than 10 min to less than 400 m, although large whales can dive to 1100 m and for periods of up to an hour. Average ascent and descent rates from and to different depths for various durations range between 70 and 158 m/min and 87 and 168 m/min, respectively. The respiratory rate between dives generally varies between 4 and 7 blows/min. There appears to be a similar pattern of social groupings during diving as that seen at the surface by various authors. The smaller whales tend to be more social than the large bulls which are frequently solitary on dives. (Auth. mod.)

B-21055
Guillard, R.R.L., Kilham, P., **Ecology of marine planktonic diatoms,** Biology of diatoms, edited by D. Werner. Botanical monographs, Vol.13, Berkeley, University of California Press, 1977, p.372-469, Refs. p.451-469.

DLC QK569.D54B56

This review of marine planktonic diatom ecology is restricted almost entirely to considerations of geographical distribution and seasonal succession. In a section on the Antarctic and the Southern Ocean, it is noted that endemism is high in antarctic biota. Including both benthic and planktonic species, recent estimates are 60-65% of the species. At the generic level, most of the important taxa in the antarctic plankton are cosmopolitan. The genera *Chaetoceros, Coscinodiscus, Nitzschia, Thalassiosira* and *Rhizosolenia* account for more than half the common planktonic species in the Southern Ocean. The most important numerically are in the size class of the nannoplankton (10-50 microns). Some of these species have been found in concentrations as high as 1,000,000 cells/liter. The number of diatoms considered to be bipolar has diminished as knowledge accumulates. A large fraction of the primary production in both antarctic and arctic seas results from the photosynthesis of algae, mostly diatoms, frozen in the ice.

B-21056

Boyd, J.C., LeResche, R.E., Sladen, W.J.L., **Growth of Emperor penguin chicks at Cape Crozier, Ross Island, Antarctica,** International Ornithological Congress, 15th, The Hague, Aug. 30-Sep. 5, 1970. Proceedings, Leiden, The Netherlands, E.J. Brill, 1972, p.633, Abstract only.

DLC QL671.I7

Samples of crèche stage chicks from Cape Crozier, Ross Island, were weighed and growth curves calculated for two seasons. These are compared with Mougin's data of one season at Pointe Géologie, Terre Adélie, a northern rookery. A mean hatch date of 24 Aug. is calculated for the Cape Crozier rookery, and an "astronomical day-length" of 4 1/2 hours is noted incidentally for the mean hatch dates of both rookeries. The importance of nearby open water for feeding is stressed. The rookery is ambulatory and its movement totalled 4 km each season, the position and rate of movement dependent upon ice conditions and the stage of the breeding cycle. The Ross Ice Shelf moves seaward approximately 1 km/year, resulting in periodic exposure of the rookery to premature ice breakout and increased chick mortality. (Auth.)

B-21057

Wood, R.C., **Population study of south polar skuas *(Catharacta maccormicki)* age one to eight years,** International Ornithological Congress, 15th, The Hague, Aug. 30-Sep. 5, 1970. Proceedings, Leiden, The Netherlands, E.J. Brill, 1972, p.705-706, Abstract only.

DLC QL671.I7

Observations were made of 8 age groups of South Polar Skuas that were individually marked as chicks at Cape Crozier, Ross Island, and were compared with data from 110 breeding pairs of unknown age. The number of returning skuas increased with age, leveling off from the fourth to eight years at 27% to 29% of chicks fledged. One hundred and ten skuas were known to breed, the youngest at 4 years of age. The average age of first breeding for 58% of the 8-year cohort was 6.9 years, the remainder not yet having bred. Approximately 30% of known-aged breeders nested within 100 meters of their natal sites while others were widely separated in the 600 x 2,500 meter breeding area. Faithfulness of 8-year breeders to mate and nest site was as high as in older, longer-established breeders. Of 37 known-aged skuas breeding for the first time, 13 paired with skuas that had bred previously and 24 paired with skuas that were probably breeding for the first time. Breeding success was extremely low, being 0.04 fledglings per breeding pair in contrast to 0.34 fledglings per pair for skuas of unknown age.

B-21060

Booth, J.D., Burckle, L.H., **Displaced antarctic diatoms in the southwestern and central Pacific,** *Pacific geology,* 1976 Vol.11, p.99-107, 21 refs.

Displaced high southern latitude diatoms may be used to trace the northward flow of Antarctic Bottom Water in the southwest and central Pacific. More than 100 deep-sea sediment core tops from this region were examined for antarctic diatoms. The distribution of these diatoms agrees with what is known of the path of spreading of the Antarctic Bottom Water. (Auth.)

B-21063

Clark, A.M., **Note on an echinoid from Gough Island, South Atlantic,** *Beaufortia,* May 17, 1968 15(186), p.51-56, 7 refs.

Five specimens of the echinoid, *Pseudechinus novaeamsterdamiae* (Döderlein, 1906), are here recorded from Gough Island. Some other species of the genus are discussed and numerical data on these and the Gough Island specimens tabulated. (Auth.)

B-21080

Llano, G.A., **Life in the deep south,** *Frontiers,* Autumn 1978 43(1), p.30-33.

DSI 505.73F93

The antarctic marine environment and its resources are described: phytoplankton, zooplankton, whales, seals, penguins, winged birds, fishes, and a highly diverse benthic flora and fauna. Krill are biologically and economically the most important group in the antarctic marine ecosystem; they are key organisms in the antarctic food chain and the focus of industrial exploitation. Current whale stocks, estimated at 338,000, consume some 33 million tons of krill yearly. The surplus potential annual krill harvest has been estimated at 150 million tons. More than half of the world's seals are in the Antarctic. Marine birds play an important role in enriching the land ecosystem through their guano deposits, which transfer phosphates and nitrates from the sea to the land. Nototheniidae represent the largest family of fishes and appear to be the principal fish catch.

B-21081

Lugo, A.E., **Harvesting: ecological and energy considerations,** *Frontiers,* Autumn 1978 43(1), p.34-37.

DSI 505.73F93

The antarctic ecosystem is limited by the amount of solar energy it receives and the seasonality of its delivery, a condition which results in reduced diversity of species and increased biomass of the species. When energy is abundant, it is rapidly concentrated along a simple food chain and stored as biomass which is then available for consumption during periods of low primary productivity or during times of high environmental stress. There are two types of food chains: the grazer food chain based on the grazing of live plants by krill and zooplankton, and a food chain based on dead organic matter (detritus), which originates with decomposer microorganisms and supplements the grazer food chain via krill and other benthic consumers. In order to determine how much biomass can be harvested without disrupting the functions of the system that make the biomass production possible, it is necessary to consider the following: 1) the rate of biomass production determines the available yield for any consumer; 2) the rate of biomass removal must be limited by the whole ecosystem's biomass needs; and 3) our share must be limited by the net energy involved in harvesting. Two alternatives are considered for harvesting the Antarctic Ocean. Alternative 1 provides for competition between humans and other consumers for krill; alternative 2 involves the consumption of other consumers of krill, but not the krill. It is suggested that alternative 2 results in a higher net yield of energy and would enable yields to be sustained over a longer period of time, since it protects the ecological work of krill.

B-21082

El-Sayed, S.Z., **BIOMASS,** *Frontiers,* Autumn 1978 43(1), p.38-39.

DSI 505.73F93

At the invitation of the U.S., a conference was held in 1976 at Woods Hole, Mass., to review the present knowledge of the living resources in the Southern Ocean and develop a proposal for future cooperative studies in the area. The proposal became known as Biological Investigations of Marine Antarctic Systems and Stocks (BIOMASS). The principal objective of the BIOMASS program is to gain a deeper understanding of the structure and dynamics of the antarctic marine ecosystem as a basis for the future management of potential living resources. Krill studies will include krill's fundamental biology, higher trophic levels' dependence on krill stocks, and the interrelations between krill swarming and the hydrographic features of antarctic waters. To implement BIOMASS, the First International BIOMASS Experiment (FIBEX), involving several vessels in a multidisciplinary process-oriented study of variabilities of ecological parameters in space and time, will take place in the austral summer 1980/81, concentrating on the Atlantic sector, including Drake Passage and its western approach. The second experiment (SIBEX) is scheduled for 1984/85. Workshops will provide an interim synthesis

of data, and results will be presented at symposia. The Antarctic Treaty nations met in Mar. 1978 in Canberra, Australia, and agreed in principle to a krill convention. The convention will provide for comprehensive research on the ecology of krill and a monitored quota system based on the expanding knowledge about krill.

B-21084

McLachlan, J.S., **Macquarie Island: a sub-Antarctic wonderland,** *Wildlife,* Dec. 1974 16(12), p.556-563.

DSI,S960.A598,NZP

The author spent a year as Officer in Charge of ANARE on Macquarie Island and describes the populations of seals, penguins and other birds on the island. He discusses the great strides the island has made toward recovery since being proclaimed a sanctuary in 1930 but warns that primary damage to birds by cats and secondary erosion from vegetation destruction by introduced rabbits are still a threat. The article is supplemented by a number of photographs.

B-21091

Zenkovich, B.A., **Observations of marine mammals and other animals during the antarctic expedition of the USSR Academy of Sciences (1957-1958),** *U.S. Naval Oceanographic Office. Translation,* 1970 No.515, 3p., AD-718 071, Translation of Akademiia nauk SSSR. Ikhtiologicheskaya komissiia. Trudy soveshchaniĭ, 12:23-24, 1961.

The author identifies and gives counts of the various whales and seals observed during the 105 days the *Ob'* and *Kooperatsiia* cruised antarctic waters. About 4000 whales and 1200 seals were sighted on or near the ice.

B-21101

Lipps, J.H., Ronan, T.E., Jr., DeLaca, T.E., **Life below the Ross Ice Shelf, Antarctica,** *Science,* Feb. 2, 1979 203(4379), p.447-449, 16 refs.

Samples and observations under 420 m of ice and 430 km from the open sea on the Ross Ice Shelf at a water depth of 597 m revealed an unusual assemblage of benthic organisms. Scavenging amphipods, an isopod, and fish were present but a living infauna was absent. The observations may be accounted for by sampling or spatial bias, or by extremely low or fluctuating trophic sources. (Auth.)

B-21102

Bruchhausen, P.M., **Fish, crustaceans, and the sea floor under the Ross Ice Shelf,** *Science,* Feb. 2, 1979 203(4379), p.449-451, 18 refs.

Baited traps and a camera lowered through the Ross Ice Shelf, at a point 475 km from the open Ross Sea and to 597 m below sea level revealed the presence of fish, many amphipods, and one isopod. Biological or current markings were not evident on a soft bottom littered with subangular lumps. A fish was caught through a crevasse 80 km from the shelf edge. (Auth.)

B-21103

Azam, F., **Occurrence and metabolic activity of organisms under the Ross Ice Shelf, Antarctica, at Station J9,** *Science,* Feb. 2, 1979 203(4379), p.451-453, 15 refs.

Seawater samples below the Ross Ice Shelf were collected through an access hole at J9, approx 400 km from the Ross Sea. The 237-m water column had sparse populations of bacteria, microplankters, and zooplankters at the depths studies. Microbial biomass estimates from cellular adenosine 5'-triphosphate measurements were very low (10 to 150 nanograms of carbon per liter), comparable with values for the abyssal ocean. Microbial populations assimilated tritiated D-glucose, thymidine, uridine, and adenosine triphosphate at extremely low rates, comparable with deep-sea heterotrophic populations. Sediment samples had 10,000,000 to 100,000,000 bacteria per gram (dry weight), which were metabolically active as shown by respiration of uniformly labeled D-[C-14] glucose. From this study it cannot be determined whether these organisms in the water column and sediments constitute a functioning food web. (Auth.)

B-21114

Andrews, C.J.H., **Pentobarbitone as an anaesthetic agent in the Adelie penguin (Pygoscelis adeliae),** *Journal of small animal practice,* 1975 16(8), p.515-522, 25 refs.

Thirty-two Adelie penguins captured on Adelaide I. were injected with sodium pentobarbitone (May & Baker). In twenty-two the intraperitoneal (IP) route alone was used and in ten both the IP and intravenous (IV) routes. The average time until the onset of surgical anaesthesia was 130 min (45-220). Four penguins died while under anesthetic for unknown reasons and one from blood loss; the remaining twenty-seven survived for periods up to 13 hours and were electively killed. It is suggested that the variation in the anesthetic induction period is due to the variation in the body fat content. One bird was left to recover and was immobile for 78 hours. In the penguin, barbiturates are presumably metabolized very slowly. Sodium pentobarbitone (50 mg/kg) is recommended as an anesthetic agent for deep surgical anesthesia, provided that it is a non-survival procedure, and rapid induction is not necessary. (Auth.)

B-21117

Tuffrau, M., **A new *Euplotidae: Cytharoides balechi,* n. g., n. sp., Hypotrich ciliate from Antarctica** [Un nouvel *Euplotidae: Cytharoides balechi,* n. g., n. sp., cilié Hypotriche de l'Antarctique], *Protistologica,* 1974 10(3), p.311-317, In French with English summary. 7 refs.

A new genus of marine Hypotrich of the *Euplotidae* family is described. It is essentially characterized, besides frontal, ventral and transverse cirri, by a row of 12 large cirri at the right side, and deep within a very wide peristomial opening, by extensive paroral and endoral ciliature, 13 to 26 kineties of decreasing size from left to right, giving to the dorsal side a dissymetric aspect. The ribboned horseshoe-shaped macronucleus is opened on the side. The morphology of *Cytharoides balechi* n. sp., representative of this new genus, has been studied using Protargol impregnations. (Auth.)

B-21118

Sahrhage, D., Schreiber, W., Steinberg, R., Hempel, G., **Research and exploration of the resources of krill and food fish in the Antarctic. Report on the 1975/76 Antarctic Expedition of the Federal Republic of Germany** [Erforschung und wirtschaftliche Erschliessung der Krillbestände und Nutzfische in der Antarktis. Bericht über die Antarktis-Expedition 1975/76 der Bundesrepublik Deutschland], *German Federal Republic. Bundesministerium für Forschung und Technologie. Forschungsbericht,* Dec. 1977 M 77-10, 49p., In German with English summary. 26 refs.

From mid Nov. 1975 til mid May 1976, an integrated research program has been carried out in the Atlantic sector of the Antarctic between 68 and 14 and 50 and 60S by means of the FRV *Walther Herwig* and FMS *Weser.* Data on krill and krill larvae have been gathered concerning frequency, horizontal and vertical distribution with respect to the krill biology. Furthermore, hydrographical data on the environmental conditions have been recorded. The problems of locating and catching the krill have been solved to a large extent. The processing of krill and the development of krill products has been tested by a great number of different technologies. The investigations have been concentrated on the development of the products for human consumption. Besides krill, antarctic fishes have been caught, investigated and partly processed. Results are presented in detail.

B-21148

McSweeny, E.S., **Systematics and morphology of the antarctic cranchiid squid *Galiteuthis glacialis* (Chun),** *American Geophysical Union. Antarctic research series,* Mar. 6, 1978 27(1), p.1-39, Refs. p.38-39.

Examination of material of *Crystalloteuthis glacialis* Chun, 1906, collected by the U.S.N.S. *Eltanin* in antarctic waters indicates that *Crystalloteuthis* Chun, based on this species, is a synonym of *Galiteuthis* Joubin, 1898. *Galiteuthis glacialis* is completely described and illustrated, and its morphological development from 4-mm to 495-mm mantle length is given. The taxonomic status of *Crystalloteuthis beringiana* Sasaki and *Galiteuthis aspera* Filippova is discussed. (Auth.)

B-21149

Thompson, J.C., Jr., Croom, J.M., **Systematics and ecology of ciliated protozoa from King George Island, South Shetland Islands,** *American Geophysical Union. Antarctic research series,* Apr. 3, 1978 27(2), p.41-67, 38 refs.

Collections of ciliated protozoa were made from a variety of habitats, both freshwater and marine, from Mar. to Dec. 1970 on King George Island in the South Shetland Islands. Certain physical and chemical parameters were established for certain collection sites during the 10-month period. Ciliates of 27 genera and 7 orders were recorded. Descriptions of 17 species and limited descriptions of 6 species were given. The genera *Litonotus, Bryophyllum, Tetrahymena, Carchesium* and *Climacostomum* were new records for the Antarctic region. New species records included *Sathrophilus muscorum, Tetrahymena rostrata* and *Uronema elegans.* (Auth.)

B-21151

Everson, I., **Antarctic fisheries,** *Polar record,* Sep. 1978 19(120), p.233-251, Refs. p.249-251.

This paper reviews the available information on harvestable resources of the Southern Ocean, with emphasis on krill, fishes, and squids, and points out some of the technical and operational problems associated with fishery efforts. The topics discussed include detection and location methods, fishing methods, fishing fleet organization, annual catch, the state of stocks, and the future of Southern Ocean fisheries. Tabular data set forth the dominant features of the habitat of commercially important fish species, the results of Soviet trawling operations using a side trawl, catch rates for antarctic krill, catch rates for fish in the Southern Ocean, the composition of fishing fleets operating in the Southern Ocean, annual catches of krill, reported catches of southern blue whiting, and reported catches of unspecified demersal percomorphs from FAO areas 41 and 51 by the USSR.

B-21154

Williams, A.J., **Geology and the distribution of Macaroni penguin colonies at Marion Island,** *Polar record,* Sep. 1978 19(120), p.279-281, 5 refs.

This paper relates the distribution of Macaroni penguin colonies to the geology of Marion I., with the particular aim of accounting for the concentration of over 90 per cent of the breeding population in only two large colonies. Most of the Macaroni penguin colonies occur on rocks of the grey lava phase rather than black lavas. The reason for avoidance of black lavas seems to lie in the size and moderately heavy weight of the penguin, which limit its agility, and thus its ability to land on or cross the cliffs and larger screes, which are typical of black lavas. Moreover, Macaronis prefer to breed on flat, open or sloping terrain, which is not available on the black lavas where the surface is rough and uneven. It is speculated that the reason for the two large colonies at Bullard Beach and Kildalkey Bay may lie in the history of volcanic activity on Marion I., during which black lava covered most areas of coastal grey lava and spread across the foot of grey lava cliffs, forcing the concentration of large numbers of penguins in the east coast area with overflow into the adjacent coastal plain. Exposure of the foot of grey lava cliffs in the south and west by the marine erosion of the overlying black lavas would then permit their recolonization by Macaroni penguins.

B-21169

Baross, J.A., Morita, R.Y., **Microbial life at low temperatures: ecological aspects,** Microbial life in extreme environments, ed. by D.J. Kushner, New York, Academic Press, 1978, p.9-71.

Psychrophiles and the ecology of microbial activity at cold temperatures are discussed under the following headings: atmospheric environment; caves; freshwater environments; soils; rivers and streams; marine environments; and snow and ice. Antarctic species are dealt with under a number of these topics, especially in connection with microbial activity in lakes and ponds.

B-21173

May, R.M., **Whaling: past, present and future,** *Nature,* Nov. 23, 1978 276(5686), p.319-322.

The New Management Procedures of the International Whaling Commission (IWC) were adopted at its 26th meeting in 1974 and first put into effect in the southern summer of 1975-76. This procedure divides whale stocks in each of the ocean areas defined by the IWC into one of three categories, according to whether the populations are thought to be numerically bigger or smaller than, or near to, the size required to give maximum sustainable yield (MSY). This account reviews the historical background of whaling, examines the tensions between economic interests and sustainable yield criteria, and considers the strengths and weaknesses of the management procedures. Antarctic whale stocks are considered.

B-21174

Turner, R.L., Dearborn, J.H., **Organic and inorganic composition of post-metamorphic growth stages of *Ophionotus hexactis* (E.A. Smith) (Echinodermata: Ophiuroidea) during intraovarian incubation,** *Journal of experimental marine biology and ecology,* Jan. 8, 1979 36(1), p.41-51, 37 refs.

Eggs of most internally brooding echinoderms are small and apparently contain insufficient yolk to account for the large sizes reached by brooded juveniles. The composition of intraovarian juveniles of the six-armed subantarctic brittlestar *Ophionotus hexactis* (E.A. Smith) was measured to estimate the contribution by the parent to post-metamorphic growth. The levels of ash, carbohydrate, lipid, and protein were generally unchanged. The total dry weight increased up to 2200-fold. The contents of total organic matter and the three organic components also showed large increases, although a smaller range of juvenile sizes was available for biochemical analysis than for measurement of dry weight. Estimates based on other published data yield a 100,000-fold increase in organic content from egg to the largest reported juvenile stage; the size at wihich birth usually occurs is, however, unknown. Nutrient transfer probably involves nurse eggs and parental body fluids and does not occur by placentation or adelphophagia. Broodcare in *O. hexactis* conforms to the definition of viviparity used by insect and vertebrate embryologists. (Auth.)

B-21176

Gerson, U., Seaward, M.R.D., **Lichen-invertebrate associations,** Lichen ecology, edited by M.R.D. Seaward, London, Academic Press, 1977, p.69-119, Refs. p.112-119.

DLC QK583.L5

It has been observed that there are two more or less mutually exclusive faunas on lichens (and mosses): an aquatic fauna and a

terrestrial one. Protozoa, nematoda, rotifera and tardigrada belong to the former, whereas arthropoda and mollusca belong to the latter. This paper examines these lichen-invertebrate associations. Arthropod data collected from various lichen habitats in the maritime Antarctic are included. It is noted that most of the available data on the energetics of lichen fauna come from ecological studies of arctic and antarctic regions, probably because lichens are such an important floral component there.

B-21177

Lindsay, D.C., **Lichens of cold deserts,** Lichen ecology, edited by M.R.D. Seaward, London, Academic Press, 1977, p.183-209, Refs. p.206-209.

DLC QK583.L5

This chapter is concerned mainly with the lichens of the cold deserts surrounding the Poles, especially the Antarctic, which has been mentioned as a probable center of evolution of many plant groups before the onset of the Late Cenozoic glaciations. Some aspects of the ecology of cold desert lichens are discussed, present distribution patterns are outlined and compared for the lichens of both polar regions, and an attempt is made to reconstruct changes in the lichen flora of Antarctica in relation to the Late Cenozoic glaciation and to show how present-day distribution patterns were attained.

B-21179

Strandtmann, R.W., **Redescription of *Nanorchestes bifurcatus* (Acarina: Prostigmata: Nanorchestidae),** *Pacific insects,* Oct. 20, 1978 19(1-2), p.101-104, 2 refs.

Nanorchestes bifurcatus Strandtmann from Tottanfjella, Queen Maud Land, briefly described by Strandtmann in 1967, is more fully described and illustrated. (Auth.)

B-21183

Hargens, A.R., Scholander, P.F., Orris, W.L., **Positive tissue fluid pressure in the feet of antarctic birds,** *Microvascular research,* 1978 15(2), p.239-244, 10 refs.

Tissue fluid pressure in the web feet of antarctic birds rises from negative to positive during warming (plus 6 cm of water per 25 deg). Fluid pressures in peritonea and thighs remain in a normal negative range irrespective of thermal milieu. Since no edematous swelling is apparent in the feet during warming, web foot compliance is low. The low compliance probably results from the quilted arrangement of connective tissue in the web foot. Cooling of web feet produces a response in fluid pressure opposite to warming. This fall in fluid pressure, however, occurs at a slower rate (minus 4 cm of water per 24 deg). The development of positive fluid pressure probably results from higher web foot blood flow, a thermoregulatory response prevalent in these birds during warming. (Auth.)

B-21184

Andrews, C.J.H., **Spontaneous and bile salt stimulated bile secretion in the Adelie penguin *(Pygoscelis adeliae),*** *Quarterly journal of experimental physiology and cognate medical sciences,* 1978 63(1), p.23-37, Refs. p.36-37.

The flow rate and ionic composition of bile during spontaneous secretion were measured in anesthetized penguins in which the enterohepatic circulation had been interrupted and with i.v. injection of saline to replace secretory loss. During the first two hours the rate of flow increased, and then remained relatively constant for a further two-and-a-half hours. During this time the concentration of bile salt fell, but the concentrations of other ions showed small fluctuations only. Sodium taurocholate increased the rate of bile flow and the excretion of ions, except that of bicarbonate. Sodium taurolithocholate initially produced cholestasis, but later apparently increased bile flow and had an overall choleretic effect. It is suggested that the active excretion of bicarbonate ions by the bile ducts is the predominant regulator of bile secretion in the penguin. (Auth.)

B-21185

Griffiths, R.P., Hayasaka, S.S., McNamara, T.M., Morita, R.Y., **Comparison between two methods of assaying relative microbial activity in marine environments,** *Applied and environmental microbiology,* Dec. 1977 34(6), p.801-805, 6 refs.

Two methods for determining relative microbial activity in the marine environment were compared. In one method, a single concentration of a labeled substrate was used to calculate rates of substrate utilization; in the other, multiple concentrations of the same substrate (heterotrophic activity method) were used to calculate maximum potential substrate utilization rates. These studies were made on 232 seawater and 79 sediment samples taken from a variety of marine environments in the antarctic and arctic waters. The highest correlations between these two methods were seen in the sediment samples tested. The lowest correlation coefficient seen in the sediment samples was 0.90, and the highest was 0.98. In seawater samples (six studies), the lowest correlation coefficient was 0.77 and the highest was 0.95. The correlation between these two methods was also substrate concentration dependent. Higher correlation coefficients were observed when higher substrate concentrations were used. Under certain conditions, these two methods appear to be comparable for estimating relative levels of microbial activity in the marine environment. (Auth.)

B-21199

Chernyĭ, E.I., **Influence of hydrologic conditions on the distribution of baleen whales in the Antarctic,** *U.S. Naval Oceanographic Office. Translation,* 1973 NOO-TRANS-567, 10p., AD-767 521, 17 refs. For Russian original see B-15222.

Efficient whale hunting depends upon knowing where whale concentrations can be found. Baleen whales gather where their principal food (Euphausiids) is plentiful. The Antarctic Convergence Zone is a consistently poor whaling area because cold antarctic water plunges beneath warmer subantarctic water, inhibiting the growth of Euphausiids. The best whaling regions are where the antarctic coastal and circumpolar currents meet. These are regions where a semistationary cyclonic system coincides with plankton-rich waters upwelling from great depths. Whales locate these feeding grounds through salinity-sensing organs which direct the normal to surface water isohalines in search of the narrow range of salinity most favorable to plankton growth. They also travel parallel to isohalines to remain in the feeding grounds. (Auth.)

B-21217

Hudson, A.P., DeVries, A.L., Haschemeyer, A.E.V., **Antifreeze glycoprotein biosynthesis in antarctic fishes,** *Comparative biochemistry and physiology,* 1979 62B(2), p.179-183, 21 refs.

The synthesis and secretion of antifreeze glycoproteins (AFGP) and other plasma proteins has been examined by C-14-alanine pulse-labelling in the antarctic cod *(Dissostichus mawsoni)* at -1.5C. Protein synthetic rates (micrograms/hr per g liver) were estimated to be 130 for intrahepatic proteins, 75 for plasma proteins, and 2 for AFGP polypeptide. Time constants for secretion events have been obtained by kinetic analysis and compared with results in a temperate fish and in mammals. (Auth.)

B-21218

Seager, J.R., **Redescription of the antarctic opisthobranch *Philine gibba* Strebel, 1908, from the type locality, South Georgia, South Atlantic,** *Journal of molluscan studies,* Aug. 1978 44(2), p.171-179, 13 refs.

Philine gibba is redescribed, using large samples collected from the original type locality (South Georgia, South Atlantic). The speci-

mens examined are compatible with all but one previous description which differs sufficiently to require re-identification. Aspects of the anatomy described here differ in details from earlier studies, and it is suggested that previous descriptions are partly erroneous, owing to the examination of unrelaxed specimens and some atypical material from small samples. (Auth.)

B-21219

Yanchinski, S., **Shrimps offer a whale of a catch,** *New scientist,* Feb. 9, 1978 77(1089), p.340.

Published on the occasion of the Canberra meeting of the Antarctic Treaty powers to formulate a policy on krill, this article is a brief introduction to the promise and problems of harvesting the world's largest untapped food resource. Dearth of scientific knowledge about exactly what the optimum sustainable yield is and what effect overfishing would have on the ecosystem is stressed. Technical and processing problems are also mentioned and some examples of the types of products under development, such as soups, fried krill sticks and animal feed, are mentioned.

B-21221

Block, W., Young, S.R., **Metabolic adaptations of antarctic terrestrial micro-arthropods,** *Comparative biochemistry and physiology,* 1978 61A(2), p.363-368, 34 refs.

Comparative analyses of standard metabolism, as measured by weight specific oxygen consumption for antarctic and temperate terrestrial Acari, show that polar forms of the Cryptostigmata and Mesostigmata exhibit an elevation of metabolism of 2-4 times over their normal environmental temperature range. Metabolism-temperature curves of polar and temperate forms are similar for both groups of mites. Q10 values for antarctic mites vary from 1.28 to 3.36, which correspond to the lower portion of the range for temperate species. The elevation of metabolism as a feature of cold-adapted poikilotherms is reviewed and discussed. Present evidence suggests that antarctic terrestrial mites adapt to their low temperature environment by an elevation of standard metabolism. (Auth.)

B-21222

Groscolas, R., **Study of molt fasting followed by an experimental forced fasting in the emperor penguin *Aptenodytes forsteri:* relationship between feather growth, body weight loss, body temperature and plasma fuel levels,** *Comparative biochemistry and physiology,* 1978 61A(2), p.287-295, 35 refs.

The relation between feather replacement, body weight loss and body temperature was studied during molt followed by a forced fasting in the Emperor penguin. The existence of different physiological stages could be demonstrated. No significant changes of plasma glucose and lactate could be detected during molt or forced fasting. Constant high plasma glucose level suggests a very good adaptation to fasting. Plasma FFA increased when the feather synthesis finished (+90%) and decreased at the end of forced fasting. Plasma D-3-hydroxybutyrate was unchanged during molt but decreased by 60% during the forced fasting. These changes might be due to hormonal changes and fat store exhaustion. Body weight loss and energy metabolism are related, and possible mechanisms allowing maintenance of a high plasma glucose level are discussed. (Auth.)

B-21223

Life found inside antarctic rocks, *Machine design,* Feb. 23, 1978 50(4), p.18.

Microorganisms of various kinds—bacteria, algae and fungi—have been found by E.I. Friedmann and his wife inside antarctic rocks in the dry valleys heretofore considered to be devoid of life. The tiny organisms take refuge from the extreme cold, high winds, and dry climate in the microclimate between the minute grains of the rock. NASA biologists are interested in the possibility that the Martian landscape, equally inhospitable to life on the surface, may also house life forms inside rocks.

B-21225

May, R.M., **Ecological interactions in the Southern Ocean,** *Nature,* Jan. 11, 1979 277(5692), p.86-89.

Many of the vertebrate species of the Southern Ocean, including whales, seals, birds and fish, share a common resource, the shrimp-like krill, as the main component of their diet. The mechanisms whereby these competing species coexist are of interest in illuminating general ecological principles. This paper assesses the role and biomass of these species in the antarctic ecosystem. The baleen whales are the top predators in a very short food chain, filter-feeding on planktonic crustacea. It is concluded that baleen whales probably remain the most important vertebrate group in their effect on the antarctic ecosystem. Their stocks are likely to stabilize or slowly increase with realistic scientific management, but it is uncertain whether their original abundance will be regained even if commercial whaling ceases.

B-21228

Lindsay, D.C., **Role of lichens in antarctic ecosystems,** *Bryologist,* Summer 1978 81(2), p.268-276, 49 refs.

Antarctic terrestrial ecosystems can be divided into two main series: those of continental Antarctica and those of the maritime Antarctic. Within the former series, plant communities exist as isolated groupings of plants growing under a severe continental polar-desert climate and appear to be similar to communities of the High Arctic (e.g. the interior plateau of Devon Island.) Communities in the maritime Antarctic region are more diverse, with less severe environmental conditions, and show affinities with lichen communities occupying similar habitats in boreal-Arctic zones of the northern hemisphere. Roles played by lichens in the two series of ecosystems are influenced considerably by environmental conditions and in continental Antarctica are often completely subordinated to physical processes. Weathering of substrata, for instance, in continental Antarctica, consists of the operation of several physical processes with lichens playing an insignificant role. It is only in the more suitable habitats found in the maritime Antarctic that lichens are able to play their full role in the development and functioning of ecosystems. (Auth.)

B-21229

Strandtmann, R.W., Sömme, L., **Prostigmate mites (Acari, Prostigmata) from Sverdrupfjella, Dronning Maud Land, with description of four new species,** *Norwegian journal of entomology,* 1977 24(2), p.137-146, 4 refs.

Four new species, and one previously described, of terrestrial prostigmate mites were collected in Sverdrupfjella, Dronning Maud Land, during the austral summer of 1970/71. The following species are described as new: *Eupodes angardi, Eupodes winsnesi, Nanorchestes brekkerista,* and *Nanorchestes bellus.* (Auth.)

B-21232

Suzuki, T., **Development of concentrated protein food material from antarctic krill,** *Technocrat,* Oct. 1977 10(10), p.39-40.

A technique is described for manufacturing a functional fish protein concentrate (krill-marinbeef) from antarctic krill. The process consists of adding salt and sodium bicarbonate to the shucked krill meat, kneading it, introducing the paste by an extruder into an ethanol tank where it is stirred, then removing the ethanol and air-drying the fish. When water is added, the concentrate swells to about 3.5 times its original weight. When it is dried it can be preserved at normal temperature without being frozen. The components, properties, and methods of using the material and problems associated with its processing are discussed.

B-21237

Czeczuga, B., Klyszejko, B., **Carotenoids in fish. 14. The carotenoid content in the flesh of certain species from the Antarctic,** *Hydrobiologia,* Aug. 18, 1978 60(2), p.173-175, 8 refs.

The authors investigated the presence of various carotenoids in the fish of certain species in the *Rajidae (Raja georgiana), Muraenolepidae (Muraenolepis microps), Notothenidae (Dissostichus eleginoides, Notothenia gibberifrons, Notothenia rossi-marmorata, Trematomus hansoni)* and *Chaenichthyidae (Chaenocephalus aceratus, Champsocephalus gunnari, Pseudochaenichthys georgianus)* family from the Antarctic by means of columnar and thin-layer chromatography. The following carotenoids were identified: beta-carotene, alpha-cryptoxanthin, canthaxanthin, flavoxanthin, isozeaxanthin, zeaxanthin, tunaxanthin, lutein-5, 6-epoxide, aurochrome, aurochrome-like, auroxanthin, astaxanthin, astaxanthin ester and 4-hydroxy-alpha-carotene. The total carotenoid content of these fishes was from 0.066 to 0.122 micrograms/g fresh weight. (Auth.)

B-21240

Osnitskaia, L.K., Chudina, V.I., **Photosynthetic bacteria from Lake Vanda (Antarctica),** *Microbiology,* Aug. 1978 47(1), p.104-112, 7 refs. Translated from Mikrobiologiia, 47(1), Jan.-Feb. 1978.

Mud samples from Lake Vanda, taken from a depth of 68 m, have given photoautotropic bacteria growing under anaerobic conditions in the light at 28C with carbon dioxide as their sole carbon source. The bacteria are rounded Gram-negative rods forming a dark red pigment. Study of their morphological and physiological properties, of the absorption spectra of whole cells and extracted pigments, suggested that these bacteria should be placed in a new species *Chromatium vanda,* in view of their unique habitat and environment and of the short-wave shown in their main absorption maxima. This is apparently the first record of a photosynthetic bacterium from Lake Vanda. (Auth.)

B-21243

Sömme, L., **Cold-hardiness of *Cryptopygus antarcticus* (Collembola) from Bouvetöya,** *Oikos,* 1978 31(1), p.94-97, 17 refs.

Cryptopygus antarcticus Willem were extracted from samples of mosses collected at Bouvetoya during the Norwegian Antarctic Expedition in February 1977. The body length of the collembolans from these samples ranged from 225 to 1125 microns. The collembolans had average supercooling points between -24 and -26C. Acclimation at -5, 0 and 12C for various time intervals had no significant effect on their ability to supercool. Glycerol was not found in specimens acclimated at -5 and 0C. All specimens were killed by freezing at temperatures in the range of their supercooling points. Chill-coma temperatures of the collembolans were between -2 and -7C. (Auth.)

B-21244

Block, W., Young, S.R., Conradi-Larsen, E.M., Sömme, L., **Cold tolerance of two antarctic terrestrial arthropods,** *Experientia,* Sep. 15, 1978 34(9), p.1166-1167, 21 refs.

Two antarctic arthropods, *Alaskozetes antarcticus* (Acari) and *Cryptopygus antarcticus* (Collembola) possess the ability to supercool to -30C, but the realization of this potential is dependent on starvation. The mite contains glycerol in a concentration of about 1% fresh weight. (Auth.)

B-21249

Sun, C.-T., **Effects of various dehydration treatments on the protein quality of antarctic krill powder,** *Chinese Agricultural Chemical Society. Journal,* Apr. 1978 16(1/2), p.9-13, In Chinese with English summary. 12 refs.

Antarctic krill powder was prepared with the various dehydration methods of freeze-drying, preboiled sun-drying, and microwave oven, respectively. Nutritive evaluation of the powder was determined by feeding 6 weanling rats of Sparague-Dewley strain for 28 days under the condition *ad libitum.* The PER and NPU of krill powder are 2.32, 2.50, 1.56 and 62.7, 64.5, 58.2, respectively. The nutritive value, color, and flavor have a negative correlation with the content of free amino acid and peptide in powder preparations. The rate of autolysis of fresh krill in some higher NaCl concentration solutions was also determined. The results revealed that the best NaCl concentration for preparation of high quality krill sauce with fine protein dissolution is between 16-18% by weight. (Auth.)

B-21251

Ferguson, C.F., Raymont, J.K.B., **Biochemical studies on marine zooplankton. 12. Further investigations on *Euphausia superba* Dana,** *Marine Biological Association of the United Kingdom. Journal,* 1974 54(3), p.719-725, 13 refs.

Analyses of freeze dried antarctic krill, captured during three months of the antarctic summer, suggest that the lipid content increases as the season advances. There is also a relative increase in the proportion of lipid with increase in body weight, and conversely a fall in protein, and to some extent of carbohydrate, with increasing body size. Whereas in smaller krill, protein is the largest fraction, in large specimens of *Euphausia superba,* protein and lipid are virtually identical in amount. Carbohydrate is always the smallest of the three biochemical fractions. Analysis of the amino acid composition of protein hydrolysates of freeze dried material gave very similar results to those formerly obtained from deep frozen material. (Auth.)

B-21252

Jacob, J., **Chemotaxonomical relationships between penguins and tubenoses,** *Biochemical systematics and ecology,* 1976 Vol.4, p.215-221, 34 refs.

The compositions of the uropygial gland wax of seven species of birds of the order Procellariiformes (tubenoses), belonging to four different families, are compared with one another and with those of birds belonging to other orders. The results are discussed from a chemotaxonomical viewpoint. For this purpose, the various parameters have been depicted on a 3-dimensional matrix. Although all birds investigated are obviously related to each other, two of the species *(Diomedea* and *Garrodia)* also show a relationship to different orders. The results support the opinion that the Procellariiformes are closely related to the Sphenisciformes (penguins). (Auth.)

B-21261

Simmons, J.C., **Cool California penguins,** *American way,* Mar. 1979, p.70-74.

A laboratory for the study of antarctic penguins has been established at San Diego's Sea World Marine Park. The 80ft by 35ft windowless building, housing 280 penguins, is an immense deepfreeze with 6 mo of darkness followed by 6 of light, and four machines producing 8,000lbs of crushed ice daily. The chief goal of the project is to create a self-sustaining colony of several species of penguins for a long-term behavioral study of 20 yr or more. The work has encountered difficult challenges, one of which is the unprecedented artificial rearing of Adelie chicks from eggs hatched in an incubator. A large scale polar exhibit is planned for late 1980, with animal life from both polar regions and a snow machine to simulate polar blizzards. It is hoped that the project will provide the necessary data so that adequate safe-guards can be taken to protect animals unique to the Antarctic and that the public will become concerned about preservation.

B-21265
Hasle, G.R., ***Nitzschia* and *Fragilariopsis* species studied in the light and electron microscopes. 1. Some marine species of the groups *Nitzschiella* and *Lanceolatae*,** *Norske videnskaps-akademi i Oslo. Matematisk-naturwidenskapelig klasse. Skrifter; ny ser.* 1964 No.16, 48p. + 16 plates, Refs. p.46-48.

This examination of *Nitzschia* and *Fragilariopsis* species was carried out on a large quantity of water samples and net hauls taken by the Norwegian Antarctic Expedition 1947-48. Seven species of the *Nitzschiella* group, two of them new to science, and five of the *Lanceolatae* group, two new, are discussed and shown in the plates.

B-21267
Clarke, R., Paliza, O., **Sperm whales of the southeast Pacific. Part 3. Morphometry,** *Hvalrådets skrifter,* 1972 No.53, 106p., Refs. p.68-70.

Morphometric measurements were done on 40 foetal and 30 postnatal sperm whales in Chile and Peru and were compared with previous measurements of whales from other seas—Japan, the Bonin Islands, Durban, South Georgia and the pelagic Antarctic. Measurement in the field of 24 parts of the body is discussed for each part in turn. The transformations of the regions of the body between sexual and physical maturity are contrasted in detail for males and females. From the average percentage probabilities of similarity in the allometry of whales from pairs of localities, it is judged that whales from the Southeast Pacific, Japan, the Bonin Islands, and Durban are different from whales of South Georgia and the pelagic Antarctic south of 63S and between 95 and 150E. This latter population appears to be a mixed one containing a component similar in morphometry to whales from other localities and another component, strongest at South Georgia, which is different and which must come from the Atlantic Ocean, where morphometric data on sperm whales are at present insufficient for analysis.

B-21269
Balech, E., **Microplankton from "Productividad 3" oceanographic cruise** [Microplancton de la campaña oceanografica Productividad 3], *Buenos Aires. Museo argentino de ciencias naturales "Bernardino Rivadavia". Revista. Hidrobiologia,* 1971 3(1), 201p. + 34 plates, In Spanish. 100 refs.

Samples were taken along the southeastern Argentina littoral, to the north and west of the Falkland Islands, and across the Drake Passage to the South Shetlands. Species composition of each station's specimen is analyzed, along with abundance of plankton, carbon and chlorophyll levels. A number of new species and subspecies of dinoflagellates and diatoms are described.

B-21276
Yanase, M., **Chemical composition of the exoskeleton of antarctic krill,** *Tokai Regional Fishery Research Laboratory bulletin (Tokai-ku suisan kenkyujo kenkyu hokoku),* 1975 83, p.1-6, In Japanese with English summary. 12 refs.

To provide a basic information for the better use of the Antarctic krill as human food, the exoskeleton, separated from the residual parts, was studied for yield and chemical components, and the results were compared with those of two common prawn species. Cephalothoracic and main abdominal exoskeleton was collected from other samples of krill and one prawn species and analyzed after cleaning with water. For the determination of chitin the Elson-Morgan color reaction based on the glucosamine liberated from chitin by hydrolysis was adopted after confirming 6N HCl, 114C 6 hours was the best condition for the hydrolysis of chitin from krill. The yield of exoskeleton was 34.6% of whole krill body and the contents of chitin, Ca, Mg and P were 7.08%, 4,038, 956 and 1,983 mg % on fat-free dry basis respectively. For the water cleaned exoskeleton the contents of chitin, Ca, Mg and P were 38.7%, 13,320, 1,043 and 5,026 mg % on the same basis respectively Comparing with the prawns the ratios of Mg and P to Ca were far larger in the exoskeleton of krill. (Auth.)

B-21277
Mawatari, S., **Pedunculate ctenostome from the antarctic,** *Japanese Society for Systematic Zoology. Proceedings,* 1968 No.4, p.42-45, In Japanese with English summary. 3 refs.

Several specimens probably belonging to pedunculate ctenostome *Clavopora hystricis* were obtained by Japanese Antarctic Expedition. It consists of a peduncle of muscular heterozooecia and a calyx of ordinary autozooecia. Attaching base of peduncle is circular with serrate edge showing the smaller inactive zooecia. Muscular heterozooecia are elongate hexagonal when extended, and numerous annules appear when they contact strongly. According to the author, the genus *Ascorhiza* is identical with *Clavopora,* and O'Donoghue's *C. occidentalis* is identical with *C. hystricis* Busk. The present specimens can be identified as *Clavopora hystricis* by their circular basc, myoecial peduncle and autozooecial calyx. (Auth.)

B-21279
Tsurikov, V.L., Vedernikov, V.I., **Photosynthesis of algae in ice,** *Soviet journal of marine biology,* May-June 1978 4(3), p.637-643, Translated from Biologiia moria. 33 refs.

Microflora and conditions for photosynthesis in different layers of sea ice and undersea ice are described from the data in the literature. In spite of the sharp drop in light energy as the ice thickness increases, the upper layers are relatively poor in unicellular algae in comparison with the middle and lower layers. Ice flora are mainly pinnate and centric diatoms. Photosynthetic intensity is maximal in the upper and middle (solid) layers of ice. Primary production of solid sea ice in Antarctic coastal waters in the summer is comparable to the eutrophic and mesotrophic regions of the World Ocean. Algae in the lower (cellular) layer of ice and under sea ice phytoplankton, far removed from the edge of the ice, have a low light optimum of photosynthesis. Primary production of upper layers of undersea ice water depends greatly on the transparency and thickness of ice. (Auth.)

B-21281
Ho, C.Y.-K., **Biochemistry and immunochemistry of penguin egg-white proteins,** Berkeley, University of California, 1975, 146p., University Microfilms order No.76-7845, Ph.D. thesis. Refs. p.46-55.

An attempt was made to obtain some quantitative biochemical and immunological information for describing the evolutionary and taxonomic relationships of penguins. The initial studies involved the isolation, purification, and characterization of the ovalbumin, penalbumin, and ovotransferrin from Adelie *Pygoscelis adeliae* and Emperor penguin *Aptenodytes forsteri* egg-whites. The egg-whites of five penguin species were tested against rabbit antisera to ovalbumin and penalbumin of both the Emperor and Adelie penguins. The data indicated that penguin ovalbumin and penalbumin are independent proteins without sharing any antigenic determinants. A survey of the distribution of penalbumin in birds was also made. Penalbumin is widely distributed, being found in at least 12 orders. Hence the origin of penalbumin may be at least as old as the class Aves itself, which arose over 100 million years ago. A grouping of species could also be made, based on the cross-reactivity of penalbumin. (Auth. mod.)

B-21284

Brown, M.J., Jenkin, J.F., Brothers, N.P., Copson, G.R., ***Corybas macranthus* (Hook.f.) Reichb.f. (Orchidaceae), a new record for Macquarie Island,** *New Zealand journal of botany,* Sep. 1978 16(3), p.405-407, 8 refs.

The occurrence of *Corybas macranthus* on Macquarie Island is reported. This is the first record of a member of the Orchidaceae occurring in the Subantarctic. Details of the habitat and known distribution of the species are given. The possible means whereby the orchid extended its range from New Zealand are discussed. (Auth.)

B-21289

Priddle, J., Dartnall, H.J.G., **Biology of an antarctic aquatic moss community,** *Freshwater biology,* Oct. 1978 8(5), p.469-480, 26 refs.

DSI QH96 A1F88

Two species of aquatic moss *(Calliergon sarmentosum* and *Drepanocladus* sp.) occur in deep water in Moss Lake, Signy Island. Their elongate stems support a structurally complex community of epiphytic algae and associated invertebrates which has a greater diversity than the surrounding benthic algal communities. Qualitative differences in the distribution and abundance of the epiphytic algae are described. The succession of epiphytes down the stem and the progressive deterioration of the moss plant are used to charactierize six stem zones. The invertebrates are benthic and most move actively among the moss. A settlement experiment has shown the importance of wind-induced mixing in summer for the transport of some epiphytic species from shallow parts of the lake. The settlement of sessile rotifers is effected by their larvae. Interrelationships between the invertebrates and the epiphytic algae are suggested, and a comparison is made between these data and other studies. (Auth. mod.)

B-21293

Schlatter, R.P., **Research on antarctic birds and mammals by Chilean workers in the Chilean Antarctic; its history, an overview and future plans** [Los estudios científicos de aves y mamíferos antárticos efectuados por investigadores chilenos en el Territorio Chileno Antártico, consideraciones sobre su historia, análisis y visión al futuro], *Santiago de Chile. Instituto Antárctico Chileno. Revista de difusión,* Dec. 1978 No.10, p.25-33, In Spanish. 13 refs.

Most of the work done by Chileans in the field of zoology has been done on birds. There have also been some censuses of penguin colonies, but not all areas have been studied, largely because of lack of helicopter support and other logistic problems. Continuation and expansion of serious research is essential if Chile is to provide convincing backing for its claim to antarctic territory.

B-21294

Schlatter, R.P., **Albinism in a Gentoo penguin** [Albinismo en un Pingüino papua], *Santiago de Chile. Instituto Antártico Chileno. Revista de difusión,* Dec. 1978 No.10, p.35-36, In Spanish with English summary. 3 refs.

The observation of an imperfect albinistic Gentoo penguin is reported.

B-21315

Burger, A.E., **Interspecific breeding attempts by *Macronectes giganteus* and *M. halli*,** *Emu,* Oct. 1978 78(4), p.234-235.

The Southern Giant-Petrel *Macronectes giganteus* and the Northern Giant-Petrel *M. halli* have been recognized as distinct species since 1966. The species differ in their breeding schedules and choice of nest sites. At Marion Island *M. halli* laid from Aug. 10 until Sept 1 and *M. giganteus* from Sept. 18 to Oct. 2, (1974 and 1976 seasons). *M. halli* nests singly or in small loose colonies in sheltered nest sites. *M. giganteus* nests in larger colonies, usually in open exposed sites and occasionally in sheltered sites. There are 1,337 pairs of *M. giganteus* and 153 pairs of *M. halli* breeding at Marion Island. Two apparently mixed pairs of giant-petrels have been found at Marion Island. In early Sept. 1974 one pair was found incubating an egg, which later failed for unknown reasons. No details of the age and sex of the members of the pair were obtained. In Aug. 1976, at a site within 200 m of the previous sites, a mixed pair was again found. The birds were photographed, banded and measured.

B-21316

Johnstone, G.W., **Interbreeding by *Macronectes halli* and *M. giganteus* at Macquarie Island,** *Emu,* Oct. 1978 78(4), p.235.

At Macquarie Island the Northern Giant-Petrel *Macronectes halli* lays from about Aug. 11, to Sep. 6, and the Southern Giant-Petrel *M. giganteus* from Sept. 17, to Oct. 19. The incubation period of both is about sixty days. *M. halli* nests singly or in loose aggregations in sheltered sites. Most *M. giganteus* nest in larger colonies in exposed sites. The breeding populations of the two species on the Island are approximately 1,000 pairs of *M. halli* and 4,000 pairs of *M. giganteus.* Observations of the two species reveal strong evidence that interbreeding occurred on at least three occasions, but there is no evidence that any egg resulting from these attempts at hydridization hatched.

B-21318

Ecology of a subantarctic island: 15 years on, *South African journal of science,* Dec. 1978 74(12), p.451-452.

This article is an introduction to the ecology of Marion Island. Both the flora and fauna of the area are discussed, as well as the impact of sealing and penguin slaughter in the past. There are two inserts, one of which briefly reviews the geography, history, and climate of the island, while the other outlines the distortions in the natural ecology effected by man's introduction of foreign species—sheep, cats, hens, and non-native grasses.

B-21322

Skira, I.J., **Reproduction of the rabbit, *Oryctolagus cuniculus* (L.), on Macquarie Island, Subantarctic,** *Australian wildlife research,* 1978 5(3), p.317-326, 18 refs.

The reproduction of rabbits on Macquarie I. was studied from Dec. 1973 to Feb. 1975. The breeding season extended from late Aug. 1974 to mid-Mar. 1975; both sexes showed an annual cycle in development and regression of the gonads. Between mid-Oct. and mid-Nov. 92% of females sampled were pregnant; during this period the maximum numbers of corpora lutea and embryos were 8.55 and 6.50 per female, respectively. Few resorptions occurred, although the number of pregnant females that resorbed increased as the breeding season progressed. Of all rabbit kittens produced in the 1974-75 breeding season, 64% were born by mid-Dec. 1974. Female rabbits in their first year of breeding bore the greatest number of kittens; natality decreased as females aged. (Auth.)

B-21323

Seppelt, R.D., Ashton, D.H., **Studies on the ecology of the vegetation at Mawson Station, Antarctica,** *Australian journal of ecology,* Dec. 1978 3(4), p.373-388, Refs. p.387-388.

The flora of Mawson Rock is fairly depauperate; the two commonest lichens are *Buellia frigida* and *Caloplaca elegans* and the only two mosses are *Bryum algens* and *Grimmia lawiana.* The lichens form open colonies on exposed rock, and closed patches on sheltered aspects. The mossfields are small and confined chiefly to gravels on northerly aspects receiving snowbank melt waters. The moss colonies form cushions, turfs or hummocks and may be contorted by cryoturbic processes. Larger colonies thus contain greater cores of

sand and gravel. Mature cushions of *Bryum algens* are up to 25 years old, but the deepest peats are certainly much older. The small biomass of green moss in the most sheltered sites at Mawson is similar to comparable mossfields on the exposed plateau of subantarctic Macquarie Island. (Auth.)

B-21324

Gaevskaia, A.V., Kovaleva, A.A., **Trematodofauna of some mass species of fish in the southwest Atlantic** [Trematodofauna nekotorykh massovykh vidov ryb iugo-zapadnoĭ Atlantiki], *Kaliningrad. Atlanticheskiĭ nauchno-issledovatel'skiĭ institut rybnogo khoziaĭstva i okeanografii. Trudy,* 1976 Vol.60, p.3-14, In Russian with English summary. 12 refs.

Evidence of trematode infestation of 11 Notothenidae, Chaenichtydea and Bathydraconidae in April-June 1972 is presented. It is established that they can be infested with 9 trematode species. One species: *Opechona magnatestis* and two subspecies: *Plagioporus lobatus georgianus* and *P. pennelli georgianus* are described for the first time; *Lepocreadium* sp. Szidat, 1950 is found similar to *L. trullaforme* Linton, 1940, while *Genolinea leiperi* Byrd, 1963—to *G. bowersi* (Leiper et Atkinson, 1914). Species composition of fish trematodofauna was found to be poor. The species occurring most frequently are *Parahemiurus oatesi* and *Plagioporus lobatus georgianus;* almost all investigated fishes were infested with them. (Auth.)

B-21325

Voronin, V.A., Frolkina, Zh.A., **Age determination in green notothenia *(Notothenia gibberifrons* Lönnb, Notothenidae) of the southwest Atlantic** [Opredelenie vozrasta zelenoĭ nototenii *(Notothenia gibberifrons* Lönnb, sem. Notothenidae) iugo-zapadnoĭ Atlantiki], *Kaliningrad. Atlanticheskiĭ nauchno-issledovatel'skiĭ institut rybnogo khoziaĭstva i okeanografii. Trudy,* 1976 Vol.60, p.29-37, In Russian with English summary. 13 refs.

The article describes methods of determining age, time of annual ring formation, and establishing the time of the first spawning. Age should be determined by scales. It was noted that the first 3-4 annuli are feebly marked in many individuals. Thus to determine age it is advisable to make use of polymodal curve plotted by the number of sclerites up to the first, the second, the third, the fourth annuli. Time of annulus formation is determined: with mature individuals this takes place in May-September, with immature ones in July-August. Discrepancy in weight and linear growth rates of males and females is insignificant and irregular. Spawning part of the population of green notothenia is presented by individuals in the age of 7-18 years, 11-14 year fishes constituting more than 70%. Middle age of males is 12.8 years, that of females 12.6 years. (Auth.)

B-21326

Shcherbich, L.V., Slepokurov, V.A., **Natural mortality of *Notothenia rossi marmorata*** [Estestvennaia smertnost' mramornoĭ nototeniĭ], *Kaliningrad. Atlanticheskiĭ nauchno-issledovatel'skiĭ institut rybnogo khoziaĭstva i okeanografii. Trudy,* 1976 Vol.60, p.76-84, In Russian with English summary. 14 refs.

On the basis of age composition of marbled notothenia stock, isometric individual growth, which is a basic condition of application of Biverton and Holt's model, is established. To express connections between growth and age, Bertalanfi's equation was used. Numerical values of the given equation's parameters were found by Ford and Wolford's (1946) method as well as by that of Hohendorf (1966). Coefficient of spontaneous natural mortality is determined by Biverton and Holt's (1957) method and equals 0.38 which constitutes 30% of the annual loss. (Auth.)

B-21344

Hempel, I., Hempel, G., **Larval krill *(Euphausia superba)* in the plankton and neuston samples of the German Antarctic Expedition 1975-76,** *Meeresforschung,* 1978 26(3/4), p.207-216, 11 refs.

In austral summer 1975/76 euphausiid larvae were collected in the Atlantic sector of the Southern Ocean. Only after mid January larvae of *Euphausia superba* played an important role. Highest abundance of krill larvae was found in the north and north-east of the Antarctic Peninsula, both in the oblique hauls 0-200 m of RMT 1 and in neuston samples taken by a two-layer David catamaran gear. Early calyptopis stages were collected mainly in January-February by RMT 1, later stages, including some postlarvae occurred in March-April, particularly in the neuston samples. (Auth.)

B-21345

Roschke, N., **Variability in protein and fat content of krill *(Euphausia superba* Dana)** [Variabilität des Fett- und Proteingehalts beim Krill *(Euphausia superba* Dana)], *Meeresforschung,* 1978 26(3/4), p.217-221, 7 refs. In German with English summary.

Protein and fat content of krill on dry matter basis correlate negatively; if the protein content decreases, the fat content will increase and vice-versa. The influence of chitin-nitrogen, sampling, statistical scattering factors, season and maturity are discussed. (Auth.)

B-21346

Sahrhage, D., **Length-weight correlation in antarctic krill, *Euphausia superba*** [Zur Längen-Gewichts-Beziehung beim antarktischen Krill *(Euphausia superba)*], *Meeresforschung,* 1978 26(1/2), p.47-49, In German with English summary. 2 refs.

During the German Antarctic expedition 1975/76 the length/-weight relationship of krill was studied on board F.R.S. *Walther Herwig* in April 1976 from 5 stations east of South Georgia and southeast of the South Sandwich Islands. From pelagic trawl catches a total of 1085 fresh krill between 20 and 61 mm were measured and the average weight per specimen in each length group determined. A linear regression was calculated, and the results are shown in a graph. A comparison with the results of previous authors shows good agreement with Lockyer (1973) if data for males and females are considered together. Some differences are found from the results of Chekunova and Rynkova. (Auth.)

B-21347

Ball, I.R., Hay, D.A., **Taxonomy and ecology of a new monocelid flatworm from Macquarie Island (Platyhelminthes, Turbellaria),** *Bijdragen tot de Dierkunde,* 1977 47(2), p.205-214.

Macquarie Island has been investigated for the occurrence of freshwater macroturbellarians. Twenty sites were examined but only one species, here ascribed to the genus *Minona* sensu lato of the Monocelididae, was found and it is described as *Minona amnica* sp. nov. Its closest taxonomic relationships seem to be with *M. istanbulensis* Ax from the Black Sea, and *M. inica* Marcus from Brasil. The new species is unusual in that it occurs throughout the fresh waters of the island even though it is a member of a predominantly marine group. *Minona amnica* occurs from wind-swept plateau lakes down to brackish water near the sea and data concerning the distribution and relative abundance of the species in various habitats are presented and discussed. (Auth.)

B-21348
Kock, K.-H., Stein, M., **Krill and hydrographic conditions off the Antarctic Peninsula,** *Meeresforschung,* 1978 26(1/2), p.79-95, With German summary. 24 refs.

Krill and hydrographical data collected by FMS *Weser* in the eastern Bellingshausen Sea from 1 to 11 Feb. 1976 were analyzed for length frequency distribution of krill and under the aspect whether part of the Bellingshausen Sea stock might supply the dense krill concentrations off South Georgia. From the hydrographical data it is obvious that this krill is not the source for the South Georgian krill. The occurrence of 2 defined peaks in the length frequency distribution of adult females leads to the assumption that 2 age groups (2+, 3+) were present in the stock. (Auth.)

B-21350
Campbell, P.J., **Primary productivity of a hypersaline antarctic lake,** *Australian journal of marine and freshwater research.* Dec. 1978 29(6), p.717-724, 18 refs.

Although viable unicellular green algae are found in Deep Lake (a perennially ice-free hypersaline lake) attempts made throughout a year to detect primary production using C-14 failed. It is concluded that the rate of production in the limnetic zone does not exceed 0.15 mg C/cu m/h. Only one positive measurement of carbon fixation was obtained: a sample collected near the bottom after the sediments had been disturbed gave a value of 0.18 C/cu m/h. It was calculated that the upper limit of phytoplankton production was 3.3 C/sq m/yr and that total primary production could not exceed 10 C/sq m /yr. Thus Deep Lake is one of the least productive lakes yet recorded. The combined effects of nutrient deficiency, hypersalinity, low temperatures and annual extremes in the availability of light in restricting the species diversity, population and productivity are stressed. One experiment in the nearby freshwater Watts Lake indicated a primary productivity in the limnetic zone ranging from 0.10 to 0.94 C/cu m/h.

B-21351
Bayly, I.A.E., **Occurrence of *Paralabidocera antarctica* (I.C. Thompson) (Copepoda: Calanoida: Acartiidae) in an antarctic saline lake,** *Australian journal of marine and freshwater research,* Dec. 1978 29(6), p.817-824, 12 refs.

The systematic position and phylogenetic derivation of *Paralabidocera* is discussed. The female urosome and most of the appendages of a lacustrine form of *P. antarctica* are figured, as are the female urosome and male fifth legs of the paratypes of a synonym *(P. hodgsoni* Wolfenden). The significance of the tolerance of a broad range of salinities by *P. antarctica* for concepts of evolution of euryhalinity within the Acartiidae is pointed out. (Auth.)

B-21352
Sun, S.H., Huppert, M., Cameron, R.E., **Identification of some fungi from soil and air of Antarctica,** *American Geophysical Union. Antarctic research series,* 1978 30(1), 26p., Refs. p.25-26.

The occurrence of fungi among the microbial flora of the Antarctic has been reported by other investigators. Most of these studies were limited to taxonomic identifications at the genus level. The present work extends these identifications to the species level and includes a greater number of strains. A total of 91 cultures were studied with 90 classified into 27 species in 17 genera. These are accompanied by descriptions and photographs of representative colonics and characteristic microscopic structures. A key to the identification of these species is included. Two potentially pathogenic species of fungi were among those identified *(Phialophora dermatitidis)* and *Phialophora gougerotii).* (Auth.)

B-21356
Wardle, P., **Origin of the New Zealand mountain flora, with special reference to trans-Tasman relationships,** *New Zealand journal of botany,* Dec. 1978 16(4), p.535-550, Refs. p.548-550.

The origins of the mountain flora of New Zealand are discussed, particularly in relation to a recently expressed view that some of the most important genera arrived in late Pliocene-Pleistocene times via the Australian mountains. Bird migration paths and disjunct distribution of some graminoids attest to the probability of occasional direct dispersal to New Zealand from the Northern Hemisphere. Pre-glacial Antarctica must also have been a major source for New Zealand mountain plants. The alpine flora of New Guinea, on the other, is younger and there are few indications that it has contributed to Australasian alpine floras, either primarily or as a "stepping stone" from Asia.

B-21357
Given, D.R., **Subantarctic Pteridophyta: observations and new records,** *New Zealand journal of botany,* Dec. 1978 16(4), p.551-552, 10 refs.

Observations on *Grammitis crassa, Grammitis givenii, Hymenophylum lyallii, Lycopodium australianum, L. Scariosum,* and *Tmesipteris tannensis* from Campbell Island and the Auckland Islands are offered. *H. lyallii, L. scariosum* and *T. tannensis* are new records.

B-21370
Korabel'nikov, L.V., **Summer distribution of Procellariiformes in the Southern Ocean** [K voprosu o letnem rasprostranenii trubkonosykh ptits v moriakh IUzhnogo okeana], *Kharkov, Universytet. Visnyk,* 1976 No.135, p.115-117, In Russian. 2 refs.

Procellariiformes of the Southern Ocean can be divided into four groups in terms of their summer distribution. The first group is limited to breeding in the antarctic region, nesting on the continent or sea ice. Others are found to nest somewhat farther north as well, including in their summer range the subantarctic islands but generally remaining south of the Antarctic Convergence. The third group breed in the temperature zone, although they are often seen in polar regions as well. The fourth group breeds in warm or temperate waters and is only infrequently seen south of the Convergence. The main representatives of each of the four groups are listed, and the lower and upper limits of water and air temperature for each group's range are given.

B-21371
White, M.G., **New species of marine isopod of the genus *Antarcturus* (Isopoda, Valvifera) from the South Orkney Islands,** *Crustaceana,* 1979 36(1), p.90-98, 12 refs.

A large antarcturid isopod was common in collections of benthos taken at Signy Island, South Orkney Islands, as part of a program by the British Antarctic Survey to study the nearshore marine ecosystem. It occurred associated with sublittoral macroalgae at a number of shallow water stations and was an undescribed species which possessed certain diagnostic morphological characters of both the genera *Antarcturus* and *Microarcturus.* The new species is described and its generic position discussed. (Auth.)

B-21372
Barré, H., Mougin, J.L., Prévost, J., Van Beveren, M., **Bird ringing in the Crozet Archipelago, Kerguelen, New Amsterdam and St. Paul Islands,** *Ring,* 1976 86/87(1/2), p.1-16, 14 refs.

DLC QL671.R54

Preliminary results of bird ringing carried out on the French subantarctic islands allow four categories of local birds to be estab-

lished. Some are sedentary, such as *Anas eatoni* and *Chionis minor*. Some, like the King penguin, while not totally sedentary, make only short migrations, and their dispersion range seems to be limited to the subantarctic zone. Other species, principally albatrosses and petrel, perform long migrations. Two groups may be distinguished here—those that show a sectorial dispersion and those that make circumpolar migrations.

B-21373
Horning, D., **Exploring Macquarie Island. Part 1. Southern wildlife outpost,** *Australian natural history,* July-Sept. 1978 19(7), p.236-242, 4 refs.

This is a review of the terrestrial biology of Macquarie Island for the general reader. After a brief discussion of the island's climate, geography and history, its insect, bird and animal life is outlined. The impact of sealing and penguin-hunting, of introduced animals such as cats and rabbits, and the extent to which the island's present status as sanctuary has allowed indigenous populations to recover are dealt with.

B-21374
Lowry, J., **Exploring Macquarie Island. Part 2. Subantarctic refuge,** *Australian natural history,* July-Sept. 1978 19(7), p.242-245, 2 refs.

The author reviews the ecology of the waters surrounding Macquarie Island. Marine plants and animals are discussed in terms of their ecological niches on the island. The problem of how these species came to the area is not yet solved. For species associated with algae, rafting from South America is a possible explanation for colonization; species that cannot travel in this manner are poorly represented on Macquarie.

B-21375
Gaevskaia, A.V., Kovaleva, A.A., **New species of trematode parasites in fish of the Falkland-Patagonian region, southwest Atlantic Ocean** [Novye vidy trematod ryb Folklendsko-Patagonskogo raĭona (IUgozapadnaia Atlantika)], *Parazitologiia,* 1977 11(5), p.417-423, In Russian with English summary. 3 refs.

Four new species of trematodes are described from fishes of the Falkland-Patagonian region as follows: *Infundibulostomum patagonicum* from *Notothenia ramzay; Stenacron mancopsett* from *Mancopsetta maculata; Neolepidapedon argentinensis* from *Salilota australis; Hirudinelloides elongatus* from *Thyrsites atun*. For the latter species a new genus, *Hirudinelloides* has been erected. Representatives of the genera *Infundibulostomum, Stenacron* and *Neolepidapedon* are first reported from this region. (Auth.)

B-21382
Colombo, F., ed, **The poles** [I poli], [Milan], Vallardi Industrie Grafiche, 1976, 78p., In Italian.
DLC QH541.5.P6P65

This lavishly and colorfully illustrated introduction to north and south polar animal life provides drawings and photographs of the whales, seals, birds, and some representative marine animals of the Antarctic. A schematic illustration of the major components of the southern polar food chain is also given. Both the text and an alphabetic glossary at the end of the volume offer basic facts on biology and ecology.

B-21394
Taylor, M.E., Forester, R.M., **Distributional model for marine isopod crustaceans and its bearing on early Paleozoic paleozoogeography and continental drift,** *Geological Society of America. Bulletin, Part 1,* Apr. 1979 90(4), p.405-413, Refs. p.412-413.

Multivariate analysis of Holocene marine isopod faunas from the Arctic, Antarctic, northwestern Atlantic, southeastern Pacific, and northwestern Pacific regions confirms that on a global scale, generic-level faunal resemblance is highest between cold-water biofacies regardless of water depth or latitude. In general, warm-water biofacies are most similar to each other and least similar to cold-water biofacies. These faunal trends are apparently related to the division of the present world oceans into two general thermal realms: the psychrosphere, consisting of cold high-latitude shallow waters and deep waters at all latitudes; and the thermosphere, consisting of mainly lower latitude warm waters and temperature-variable waters above the permanent thermocline. Analogous trends in faunal resemblance and distributional characteristics have been documented for some Late Cambrian trilobite faunal resemblance and distributional characteristics have been documented for some Late Cambrian trilobite faunas, and they probably also existed during other parts of the Cambrian and during at least some parts of the Ordovician. This suggests that a two-layered thermally stratified ocean may have existed during some parts of the early Paleozoic. (Auth. mod.)

B-21395
Baust, J.G., **Strategies of low-temperature survival in an antarctic insect,** *Cryobiology,* Dec. 1978 15(6), p.682-683, Abstract only.

Belgica antarctica, a wingless midge, is the only free-living, holometabolous insect resident of the antarctic continent. Survival experiments conducted with this species are described and their results reported. Physiological mechanisms involved in the insect's survival are discussed.

B-21396
Schopf, J.M., **An unusual osmundaceous specimen from Antarctica,** *Canadian journal of botany,* Dec. 15, 1978 56(24), p.3083-3095, 10 refs.

An Antarctic specimen chiefly consisting of the osmundine root mat and including branched stems of a fern, assignable to a new species *Osmundacaulis beardmorensis,* is described and illustrated. Delicate tissues are generally not preserved and no separate petioles can be recognized. Nevertheless, the Early Triassic age of this specimen is well established and the features that can be described seem to fit generally into an intermediate position between *Osmundacaulis herstii* of the Argentine Late Triassic and *Palaeosmunda* of the Late Permian from Australia. Secretory islands in petiolar areas seem to be distinctive. The species further illustrates the long established cosmopolitan distribution of members of the Osmundaceae. (Auth.)

B-21399
Meĭsner, E.E., Kratkiĭ, V.E., **New data on the distribution of antarctic fishes,** *Soviet journal of marine biology,* July-Aug. 1978 4(4), p.733-738, 25 refs. Translated from Biologiia moria.

The paper presents a review of the results of ichthyofaunistic investigations carried out in the Indian section of the Southern Ocean. Data on the geographical distribution of 20 species of fishes included in 10 families are given. (Auth.)

B-21400
Permitin, IU.E., Tarverdieva, M.I., **Feeding of fishes of the families Nototheniidae and Chaenichthyidae in the South Orkney Islands,** *Soviet journal of marine biology,* Mar.-Apr. 1978 4(2), p.619-622, 3 refs. Translated from Biologiia moria.

The authors investigated the feeding habits of 12 species of fishes (families Nototheniidae and Chaenichthyidae) in the South Orkney Islands. The main group were plankton-eaters (eight species), two were benthos-eaters, one a predator, and one with mixed feeding

habits. The predominant food of the plankton-eaters is *Euphausia superba* Dana, which is also a major food item for fishes of other trophic groups. Taking first place in the diet of benthophages are Polychaeta and Gammaridea, while the predator eats fishes. Indices of the similarity in feeding habits of the fishes investigated were obtained. All species foraged intensively; the highest indices of stomach fullness were observed in fishes feeding on *E. superba*. The feeding habits of fishes near South Orkney Island differed from those living in South Georgia Island. (Auth.)

B-21401

Shmeleva, A.A., **New species of copepods of the genus *Calocalanus* from the Indian sector of the Antarctic and the South Atlantic,** *Soviet journal of marine biology,* Mar.-Apr. 1978 4(2), p.623-627, Translated from Biologiia moria.

Descriptions are presented of four new species of the genus *Calocalanus* (Copepoda, Calanoida) from the Indian sector of the Antarctic and South Atlantic. Depth, temperature, and salinity of their habitats are given. (Auth.)

B-21402

Kevan, P., **Anthophilous springtails (Collembola) from the Alaskan north slope, from Signy Island, Antarctica, and from near Ottawa, Ontario,** *Revue d'écologie et de biologie du sol,* July 1978 15(3), p.373-378, 19 refs.

Observations of flower visiting Collembola are few because the event is localized spatially and temporally. The visits seem important for the Collembola during a short but critical period of their lives. Most observations are of pollen feeding, but in Alaska two species imbibing nectar are described. The role of cryptic coloration of Collembola in flowers is discussed as a possible protective mechanism against predation, but in Antarctica there may be no predators which hunt by sight. Collembola are probably minimally, or not at all, functional as pollinators: e.g. on *Colobanthus quitensis* visited by *Cryptopygus antarcticus* in the Antarctic. (Auth. mod.)

B-21403

Wells, R.M., **Respiratory adaptation and energy metabolism in antarctic nototheniid fishes,** *New Zealand journal of zoology,* Dec. 1978 5(4), p.813-815, 14 refs.

Haemoglobin concentration and haematocrit vary considerably between four species of nototheniid fishes from Antarctica, and may be related to differences in metabolic demand. Red cell ATP and lactate were measured in the pelagic species *Trematomus borchgrevinki* and the benthic *T. bernacchii* at normal (-2.0C) temperatures and after 7-36h heat stress at 5C. Resting fishes have higher ATP:Hb ratios (2.0-2.4 mole/mole) at 2.0C than do fishes at 5C (0.9-1.8 mole/mole). These ratios fall during continuous swimming, and the blood lactate level rises. The importance of ATP measurements in the control of haemoglobin oxygen affinity and in relation to the theory of 'cold adaptation' is discussed. (Auth.)

B-21428

Peden, A.E., Anderson, M.E., **Systematic review of the fish genus *Lycodapus* (Zoarcidae) with descriptions of two new species,** *Canadian journal of zoology,* Sep. 1978 56(9), p.1925-1961, Refs. p.1959-1961.

Six of 11 nominal species of *Lucodapus* are recognized. Original descriptions and the disintegrated type do not permit adequate diagnosis of *L. extensus* Gilbert. The holotype of *L. microchir* Schmidt must be reexamined before the status of this nominal species can be assessed. The authors describe *L. endemoscotus* n. sp. and *L. pachysoma* n.sp. off the west coast of North America and another population of *L. pachysoma* from the Antarctic. The species of *Lycodapus* form two natural groupings. Long gill rakers and a tendency toward fewer preoperculomandibular head pores characterize *L. australis, L. derjugini, L. dermatinus,* and *L. fierasfer.* Short gill rakers, single interorbital pore, and more preoperculomandibular pores typify the remaining species of which *L. endemoscotus, L. mandibularis, L. pachysoma,* and another undescribed species from the Antarctic possess broad, stout rakers. Very reduced rakers indicate *L. parviceps* as the most differentiated of the short-rakered species. Descriptions, spot distribution maps, synonymies, and illustrations are provided for all named valid species. (Auth.)

B-21429

Vinuesa, J.H., **Contribution to the knowledge of the Decapod Crustacea of Tierra del Fuego with some zoogeographical observations** [Aportes al conocimiento de los crustáceos decapodos de Tierra del Fuego con algunas observaciones zoogeográficas], *Physis,* June 1977 36(92), p.9-19, In Spanish with English summary. Refs. p.18-19.

The importance of the West Wind Drift on the distribution of some decapods south of 53S and the past history of the Antarctic-South American Tertiary connection are discussed. Only 13 spp. were collected in Tierra del Fuego and a new record of *Pasiphaea acutifrons* Bate is established. According to other sources 43 spp. of decapods are found south of 53S; in the Magellan Strait there are 30 spp. and only 15 extend to the Argentine coasts. This peculiar distribution, noted also for others invertebrate groups suggests that Argentine subantarctic decapod fauna is native of the Pacific Ocean. (Auth.)

B-21430

Bernasconi, I., D'Agostino, M.M., **New species of antarctic ophiuroid: *Ophiomastus trispinosus* sp. nov. (Ophiuroidea, Ophiuridae)** [Nueva especie de ofiuroideo antártico, *Ophiomastus trispinosus* sp. nov. (Ophiuroidea, Ophiuridae)], *Physis,* June 1977 36(92), p.65-67, In Spanish with English summary. 3 refs.

In the *Ophiuroidea* collection from the South Sandwich Islands, kept at the Museo Argentino de Ciencias Naturales, Buenos Aires, there is one specimen of the genus *Ophiomastus* which differs from the others. The description is given. (Auth.)

B-21431

Bernasconi, I., ***Erimicaster gracilis* (Sladen, 1883) (Asteroidea, Porcellanasteridae) in the Antarctic Ocean** [Hallazgo en el oceano antártico de *Erimicaster gracilis* (Sladen, 1883) (Asteroidea, Porcellanasteridae)], *Physis,* June 1977 36(92), p.81-82, In Spanish with English summary. 5 refs.

On a cruise by the *Islas Orcadas* to South Georgia, three specimens of *Eremicaster gracilis* (Sladen, 1883) were taken near the South Sandwich Islands at a depth of 101 m. This is the first record of this species at this latitude and depth, although it is well represented in very deep seas and below 2000 m with temperatures of 1.3-2.6 deg. C.

B-21432

Scolaro, J.A., **New methodology for studying *Phocidae* (Pinnipedia)** [Nueva metodológia para el estudio de las poblaciónes de *Phocidae* (Pinnipedia)], *Physis,* June 1977 36(92), p.269-276, In Spanish with English summary. 8 refs.

A review is made of all methods employed for the evaluation of populations of antarctic seals. A new method is presented, using basic knowledge of the biology of *Mirounga leonina* L. It consists of aerial censuses of pups, performed periodically taking into account

time elapsed till the first moult. By counting only pups with the color corresponding to the newborn, errors are avoided, and resulting population estimates are more accurate. (Auth.)

B-21433

Permitin, IU.E., **Species composition and zoogeographic analysis of bottom fish fauna in the Scotia Sea** [Vidovoĭ sostav i zoogeograficheskiĭ analiz fauny donnykh ryb moria Skotiia], *Voprosy ikhtiologii,* 1977 17(5), p.843-861, In Russian. Refs. p.860-861.

Ichthyofaunal studies were carried out in the Scotia Sea. The species composition and types of bottom fish in the South Georgia, South Orkney, South Shetland and South Sandwich Island areas were investigated, permitting a more precise regionalization of the Scotia arc fish. There is a link between bottom fish of the Scotia Sea and those of East Antarctica, Kerguelen and Patagonia. However, the uniqueness of the Scotia Sea ichthyofauna is due to local physical and geographical features.

B-21434

Hayasaka, S.S., Morita, R.Y., **Salinity and nutrient effects on the induction of the galactose permease system in a psychrophilic marine *Vibrio,*** *Marine biology,* 1978 49(1), p.1-6, 20 refs.

An Antarctic psychrophilic marine *Vibrio* species was isolated having the inducible ability to accumulate nonmetabolizable thiomethyl-C-14-beta-galactopyranoside (C-14-TMG) through a galactose permease system. Induction of C-14-TMG uptake was found to have a salinity requirement which was higher than that required for uptake. At the optimum salinity, galactose and fucose were the primary inducers. Lactose produced a comparable induction but only at higher concentrations, whereas glucose did not cause induction. The initial rate of C-14-TMG uptake exhibited saturation kinetics with an apparent Km value of 0.0000048M. An amino acid, in addition to the inducer, was required for induction which could not be replaced by glycerol or galactose. Evidence is presented which indicates that the uptake of C-14-TMG is energy-dependent and that nutrient availability is more important than salinity for induction and uptake under conditions which would normally be found in the oceanic environment. (Auth.)

B-21436

Giginiak, IU.G., **Fecundity of some crustacean species in the sublittoral zone of the Davis Sea, Antarctica** [Plodovitost' nekotorykh vidov rakoobraznykh sublitorali moria Deĭvisa (Antarktika)], *Okeanologiia,* May-June 1978 18(3), p.537-541, In Russian with English summary. 15 refs.

The material was collected in the Davis Sea during the wintering period of the 16th Soviet Antarctic Expedition. A relation between absolute fecundity and size-weight indices of main representatives of crustaceans inhabiting the sublittoral zone of the sea has been determined and expressed in the form of equations. A method is suggested for determining the number of spawns of some amphipods and isopods. (Auth.)

B-21437

Fedotova, N.I., Baranov, V.S., **Changes in the lipid fatty-acid composition of *Ocean* krill paste after cooking** [Izmenenie zhirnokislotnogo sostava lipidov pasty iz krilia "Okean" pri kulinarnoĭ obrabotke], *Vorprosy pitaniia,* Jan.-Feb. 1977 No.1, p.70-73, In Russian with English summary. 15 refs.

Fatty acid composition of lipids in the krill paste *Ocean* subjected to defrosting at temperatures of 4-8 and 18-20C and subsequent heat treatment, including boiling, frying and baking, was studied by applying partition chromatography. Upon defrosting and heat treatment fatty acid composition of the paste lipids changes. In a paste defrosted at 18-20C the amount of mono- and polyunsaturated fatty acids diminishes with a relative rise in saturated ones. Defrosting at 4-8C leads to an insignificant decline of monounsaturated and to an increase of polyunsaturated acids. On baking, the content of mono- and polyunsaturated fatty acids drops by 2.26 and 11.71% respectively, while that of the saturated ones goes up by 15.00%. Frying results in only a slight drop in polyunsaturated fatty acids, whereas the level of saturated and monounsaturated ones remains nearly unchanged. (Auth. mod.)

B-21438

Chekunova, V.I., Naumov, A.G., **Energetics of the Falkland sprat *Sprattus fuegensis* Jenyns** [Energeticheskiĭ obmen folklendskogo shprota *Sprattus fuegensis* Jenyns], *Voprosy ikhtiologii,* 1977 17(2), p.338-344, In Russian. 7 refs.

Respiration studies were done on board the *Akademik Knipovich* to determine the weight-metabolism relationship in the Falkland sprat. Energy expenditure on metabolism corresponds to 3.7% of body weight, on growth—from 1.3% in yearlings to 0.4% in 4-yr olds. Average daily food intake is 6-8% of body weight. The dietary mainstay during the Dec.-Jan. period of intensive feeding is the larger *Euphausiacea.*

B-21439

Ivashin, M.V., **Some cases of embryogenic pathology in the lesser rorqual *Balaenoptera acutorostrata* (Cetacea, Balaenopteridae) from the Indian Ocean sector of Antarctica** [Nekotorye sluchai patologii embriogeneza malogo polosatika *Balaenoptera acutorostrata* (Cetacea, Balaenopteridae) Indookeanskogo sektora Antarktiki], *Zoologicheskŭ zhurnal,* Nov. 1977 56(11), p.1736-1739, In Russian with English summary. 10 refs.

A total of two cases of extra-uterine pregnancy in females 9.2 and 9.1 m long were observed on the Japanese factory *Chiyo-Maru* in the Antarctic 1973/74 season. (Auth.)

B-21440

Aleshkina, L.D., **Some comments on the morphology of crustaceans of the genus *Periplexis* (Copepoda, Syphriidae) with a more precise diagnosis of the genus** [Nekotorye zamechaniia po morfologii rachkov roda *Periplexis* (Copepoda, Sphyriidae) s utochneniem diagnoza roda], *Zoologicheskŭ zhurnal,* June 1978 57(6), p.934-935, In Russian with English summary. 2 refs.

Periplexis lobodes Wilson from *Alepocephalus australis* in the South-East Atlantic and *P. antarcticensis* in the South Atlantic are briefly described (host unknown). The diagnosis of the genus *Periplexis* is specified in terms of the structure of either cylinder-shaped or bead-like genitalia. (Auth.)

B-21441

Bushueva, I.V., **New species of *Acanthonotozomella* from the Davis Sea (East Antarctica)** [Novyĭ vid *Acanthonotozomella* iz moria Deĭvisa (Vostochnaia Antarktika)], *Zoologicheskŭ zhurnal,* Mar. 1978 57(3), p.450-453, In Russian with English summary. 3 refs.

A new species of amphipods *Acanthonotozomella pushkini* sp. n. is described from the Davis Sea. It belongs to the genus which up to now was considered as monotypic. The new species differs from *A. alata* by a spade-shaped projection on the first article of the I antennal peduncle, absence of sharpened teeth on the body (covered, instead, by rounded knolls) and of hump-shaped projections on the

posterior margins of basal articles of pereopods V-VII. An essential feature is included in the diagnosis of the genus *Acanthonotozomella,* which differs it from other genera of the family, shortened second coxal plate. (Auth.)

B-21442

Tedman, R.A., Bryden, M.M., **Cow-pup behaviour of the Weddell seal, *Leptonychotes weddelli* (Pinnipedia), in McMurdo Sound, Antarctica,** *Australian wildlife research,* 1979 Vol.6, p.19-37, Refs. p.36-37.

Observations on cow-pup behavior in the Weddell seal from birth to weaning were made at Turtle Rock, McMurdo Sound, during the breeding seasons of 1973 and 1974. Cow-pup pairs congregated about cracks in the sea ice. Pups entered the water for the first time between 8 and 12 days of age and continued to enter the water with their mothers usually at least once per 24 h throughout the rest of the 6 to 7 week nursing period. Inconsistent suckling was rare. Twenty-two marked cows suckled their own pups and no others, but on two out of 486 suckling bouts a marked pup attempted to suck from a foreign cow at least once. The total time spent suckling decreased from a mean of 298 min per 24 h during the first week post partum to 152 min per 24 h during the last 2 weeks of the nursing period. The frequency of suckling periods decreased from 13.0 to 5.4 per 24 h during the same interval. The diurnal activity pattern in the suckling coincided with the movements of the seals in and out of the water. The growth rate of pups decreased after the second week post partum, associated with increased swimming activities, decreased sleeping time and a decreased time spent suckling. (Auth.)

B-21443

Sahrhage, D., **Antarctic Expedition 1975-1976 of the Federal Republic of Germany** [Antarktis-Expedition 1975/76 der Bundesrepublik Deutschland], *Archiv für Fischereiwissenschaft,* July 1978 Vol.29, Beiheft 1, 96p., In German. Refs. passim. For individual articles see A-21449, B-21446 through B-21448, B-21450, B-21451, D-21444 and J-21445.

In view of the large potential of living resources in the Antarctic, particularly krill, for the use as human food and for other purposes, the Federal Research Center for Fisheries in Hamburg, in collaboration with the Institute for Marine Science at the University of Kiel, carried out a survey in the Southern Ocean during austral summer 1975/76. The main purpose of this scientific expedition was research on antarctic krill and commercial fish species in the Atlantic sector of the Antarctic, and an investigation of the feasibility of developing an economically viable fishery in these waters. The survey was part of the overall activities of the research sector for the exploration of new catching possibilities for the German high seas fishery. Results of the survey in biology and environment; location and catch techniques; and processing and product development are described. (Auth. mod.)

B-21446

Pommeranz, T., **Micronekton and zooplankton** [Mikronekton und Zooplankton], *Archiv für Fischereiwissenschaft,* July 1978 Vol.29, Beiheft 1, p.31-41, In German with English summary. 12 refs.

Main objectives of the micronekton and zooplankton catches were investigations of the horizontal and vertical distribution of krill, its early stages, and of fish larvae as well as studies on their ecology. High krill abundances were found mainly north of South Georgia and near the S. Shetland Islands, in the eastern part of the Scotia Sea and its boundary area to the Weddell Sea, and far southeast of the S. Sandwich Islands. Krill larvae were found especially in the Elephant Island area and in the central Scotia Sea in February and in the eastern Scotia Sea, north of South Georgia and in the eastern part of the Weddell drift in March and April. Examinations of stomach contents showed that krill is the most important component in the diet of the myctophid *Electrona antarctica.* Fish larvae of *Notothenia gibberifrons, Pseudochaenichthys georgianus, Psilodraco breviceps* and *Artedicraco mirus* from the South Georgia area could be identified. (Auth. mod.)

B-21447

Kock, K.-H., **Fishery biological investigations** [Fischereibiologische Untersuchungen], *Archiv für Fischereiwissenschaft,* July 1978 Vol.29, Beiheft 1, p.41-57, In German with English summary. 29 refs.

In the area northwest of the South Orkney Islands, adult krill of 45-60 mm length was predominant in the catches. In Nov./Dec. they were in maturity stages II-IV. Krill concentrations west off the Antarctic Peninsula were fished in Feb. 1976. The best catches were obtained off the east coast of South Georgia, where juvenile and adolescent krill were dominant. Successful hauls were taken between the surface and 90 m depth. In some cases considerable quantities of krill were caught near the bottom. Fishing trials over oceanic waters deeper than 90 m yielded salps and myctophids. The fish catches were lower than expected. Pelagic living juveniles of *Dissostichus eleginoides* were caught for the first time. Catches of commercial size of *Champsocephalus gunnari* were taken near South Georgia and northeast of the South Orkney Islands. The absolute fecundity of ice fish is low (ca. 2000-31,000 eggs). *C. gunnari* mainly fed on krill while the stomach contents of the other species consisted of krill and fish. All species were infested by the parasitic copepod *Eubrachiella antarctica* on the fins and the leech *Trulliobdella capitis* on the head.

B-21448

Freytag, G., **Investigations by echosounding** [Lottechnische Untersuchungen], *Archiv für Fischereiwissenschaft,* July 1978 Vol.29, Beiheft 1, p.58-64, In German with English summary. 11 refs.

The antarctic krill *(Euphausia superba* D.) exhibits a variety of swarm forms, which show great differences in target strength due to their different concentration of biomass. Since the backscattering cross section depends on the square of frequency, echosounders with frequencies in the range from 50-200 kHz produced more realistic envelopes of the vertical swarm extension than sounders with frequencies in the commercial range (24-28 kHz). In the net sonde, krill targets only appear when great amounts of krill enter the net. Fishery sonars (20-24 kHz) were used without success in the near and far field detection for krill. Echograms of some antarctic fish species are briefly described. (Auth.)

B-21450

Fischer, W., Mohr, H., **Behavior of krill *(Euphausia superba* Dana)** [Verhaltensbeobachtungen an Krill *(Euphausia superba* Dana)], *Archiv für Fischereiwissenschaft,* July 1978 Vol.29, Beiheft 1, p.71-79, In German with English summary. 9 refs.

In the Atlantic sector of the Antarctic, behavior of krill was investigated by echosounding. Mostly krill schools had a horizontal dimension of 10 to 100 m and a vertical one of 10 to 40 m. Different densities of krill aggregations were observed. There were compact layers as well as isolated individuals. In general, oceanic schools disaggregated at night, but they never dispersed completely. Near the shores the aggregations were often found to be extended horizontally over several miles, and various concentrations of krill were detected in different depths. The same individuals formed a school for a longer period, and it appeared that no exchange with other schools took place. Krill preferred the area between the water surface and a depth of 100 m, but sometimes large quantities of krill were also caught in 200 to 300 m. Diurnal vertical migrations could be observed only locally, and then only once a day. The maximum sinking

speed of krill was about 100 m per 90 minutes. Reactions of krill towards ship and gear were so unimportant that they can be neglected as far as fishing operations are concerned. (Auth.)

B-21451

Christians, O., Flechtenmacher, W., Papajewski, H., Roschke, N., Schreiber, W., **Processing and product development** [Verarbeitung und Produktentwicklung], *Archiv für Fischereiwissenschaft,* July 1978 Vol.29, Beiheft 1, p.80-91, In German with English summary. 9 refs.

Keeping krill in cold sea water or sprinkling it with sea water proved to be much better than dry storage. For the production of cooked minced meat, the krill was heated to 95C in fresh or in sea water or it was steamed. The meat was then separated from the shells in a bone separator with a yield ranging from 85 to 88%. Expansion peeling of cooked krill by applying vacuum was not successful; peeling by hand wasn't manageable either. Cooked minced krill seems to be the best starting product for various kinds of dishes and convenience foods. Surplus amounts of krill could be processed into meal for feed. The average content of this meal in protein was 52%, in fat 17%, and in water 6%. From the various species caught, *Notothenia rossi marmorata, Dissostichus eleginoides* and *Micromesistius australis* could be filleted by machine, contrary to fishes with white blood and other species, whose shape and anatomy differed too much. The meat of *Micromesistius australis* was heavily infested with parasites. *Notothenia rossi marmorata* has been marketed on a semicommercial basis and has been well received by the consumers. (Auth. mod.)

B-21464

Popov, L.A., Krylov, V.I., **King George Island southern elephant seals** [IUzhnyĭ morskoĭ slon o. King-Dzhordzh], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1978 Vol.69, p.120-132, In Russian. 9 refs.

Population dynamics of the southern elephant seal were studied on King George Island. Seasonal distribution along the Fildes Peninsula coast and age-sex composition of molting groups were also investigated. In light of the authors' findings, previous material on reproduction, molt, behavior, etc. is discussed.

B-21465

Krylov, V.I., Popov, L.A., **Observations on King George Island birds** [Nabliudeniia za ornitofaunoĭ o. King-Dzhordzh], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1978 Vol.69, p.133-139, In Russian. 3 refs.

Species composition of bird fauna on Fildes Peninsula near Bellingshausen Station was studied from 1973 to 1975 and substantial knowledge gained on many features of antarctic bird life. Species composition of both breeding birds and occasional visitors on Fildes Peninsula is described. A brief discussion of arrival time, nesting habits, clutch size, incubation period, nestling care and other topics is included.

B-21471

Scully, R.T., **Marine living resources of the Southern Ocean,** *University of Miami law review,* Dec. 1978 33(2), p.341-356, Numerous refs.

The author suggests that the abundance of marine life in Antarctica presents ample opportunity both for scientific study and for exploitation. He provides a survey of the distinct ecological system of the Southern Ocean through his discussion of the main marine species —from the simple organisms involved in primary production to the large marine mammals which have been subject to exploitation in the past. His primary emphasis is on krill, the small, shrimp-like crustacean which serves as the pivotal link in the Antarctic food chain. The abundance of krill, its high nutritive value and its ease of harvesting are factors which the author perceives as according krill significant potential for exploitation. At the same time, he identifies economic and technical obstacles which must be overcome if commercial krill harvesting is to develop. (Auth.)

B-21472

Llano, G.A., **Ecology of the Southern Ocean region,** *University of Miami law review,* Dec. 1978 33(2), p.357-369, Numerous refs.

The author surveys the fauna of the Antarctic region and discusses its potential commercial and scientific uses. He describes the physical basis of the food chain, its various components—benthos, fish, birds, whales, and seals—and recalls the damage done in the past by whaling and sealing. Emphasizing the much more basic and potentially harmful impact that massive exploitation of krill and other marine resources might have, he stresses the delicate natural balance that has developed over the millennia in this ecosystem of huge numbers of a relatively few species.

B-21478

Gusarova, A.N., **Authigenous silicon in the mixed plankton from the Atlantic province of the Antarctic,** *Oceanology,* Feb. 1978 17(4), p.408-411, Translated from Okeanologiia, 17(4):1977. 12 refs.

The paper is based on data collected during the 11th cruise of the R/V *Akademik Kurchatov.* Methods for primary treatment of marine plankton specimens and determination of their authigenous silicon contents are described. Species composition of the phytoplankton present in the specimens is given. Silicon concentration in the marine plankton is found to vary from 0.1 to 3.1% of the wet or from 7 to 13% of the dry specimen by weight. Silicon concentration in the mixed plankton depends on the proportions of phyto- and zooplankton, on the prevalence of a particular diatom species in the mixed plankton, and on the daily variation in the proportions of the phyto- and zooplankton in the mixed plankton. The average silicon concentration in the diatoms from the Atlantic province of the Antarctic is 1.1% of the wet or 10% of the dry specimen by weight. (Auth.)

B-21487

Some observations of South Polar skuas *(Catharacta maccormicki)* on Georges Bank, *American birds,* May 1978 32(3), p.300-302, 2 refs.

This is a report on a number of South Polar skuas observed off Georges Bank by a birder on a Coast Guard cutter taking part in a bird census project. The skuas were feeding on waste from a Soviet fishing fleet in June; by July when the fleet had departed, so had the birds. Although there are several species of skuas that visit the New England coast in the summer, it is the author's opinion that the majority are South Polar skuas.

B-21489

Krefft, G., Parin, N.V., **Results of the research cruises of FRV *Walther Herwig* to South America, 25. *Diplophos rebainsi* n.sp. (Osteichthyes, Stomiatodidei, Gonostomatidae), a new Gonostomatid fish from southern seas** [Ergebnisse der Forschungsreisen des FFS "Walther Herwig" nach Südamerika, 25], *Archiv für Fischereiwissenschaft,* Oct. 1972 23(2), p.94-100, In German with English summary. 7 refs.

A new species of the gonostomatid genus *Diplophos* Günther, 1873, *D. rebainsi* n.sp. is described from 15 specimens collected in 1971 by FRS *Walther Herwig* and R/V *Akademik Kurchatov* in the South Atlantic Ocean. In addition, 300 postlarvae of this species were caught by the last-mentioned vessel in the same area using a neuston net, and 3 juveniles in 1968 by FRS *Professor Deryugin* in the eastern South Pacific Ocean. The new species is the only gonostomatid so far known having normally 7 branchiostegal photophores. It

differs from other species of *Diplophos* mainly in the absence of a series of minute photophores on the lower jaw, in the relationship between the respective lengths of premaxillary and the toothed part of the maxillary, and in its meristics. *D. rebainsi* represents a number of the specific faunal community of the Subtropical Convergence and Subantarctic area.

B-21492

McWhinnie, M.A., Denys, C.J., **Antarctic marine living resources with special reference to krill *Euphausia superba:* assessment of adequacy of present knowledge,** Dec. 1978, 209p., Report submitted to the National Science Foundation. Refs. p.186-199.

The objectives of this study were to assess the adequacy of available information concerning krill stocks and fisheries, to provide a data base from which an analysis of the potential for harvesting krill as a resource can be made, and to estimate the environmental impact on the antarctic marine ecosystem of such a harvest. The report is subdivided into the following sections: the marine ecosystem; information required for management plans—present knowledge and studies needed; chemical composition of krill compared to conventional food sources; climate, climatic change and world food sources; current conventional fisheries activities and krill fishing; and a survey of the world literature on krill.

B-21494

Park, T., **Calanoid copepods (Aetideidae and Euchaetidae) from antarctic and subantarctic waters,** *American Geophysical Union. Antarctic Research Series,* 1978 27(4), 290p., Refs. p.286-290.

Subantarctic and antarctic calanoid copepods belonging to the families Aetideidae and Euchaetidae are the subject of this study. Sixty-two species representing 13 genera are described and illustrated from specimens found in midwater trawl collections obtained mainly by the USNS *Eltanin* in waters of the antarctic and subantarctic regions. Twelve new species representing four genera are described, and 17 other species are found for the first time from subantarctic and antarctic waters. Complete synonyms and a brief review of literature pertaining to the geographical distribution are given for each species. Keys are presented for identification of the aetideid genera and the species of those genera comprising more than three or four species. Adult males of 11 species are described for the first time. (Auth. mod.)

B-21516

Zinsmeister, W.J., **Effect of formation of the west antarctic ice sheet shallow-water marine faunas of Chile,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.25-26, 3 refs.

The biological and geological processes along the west coast of South America are dependent on the Humboldt Current, and any variation in the marine and polar climate in the southern Circum-Pacific should be reflected by corresponding changes in the Humboldt Current. The history of past climatic events in this area is examined. Recent work on the shallow-water molluscan faunas of central Chile indicates that subtropical conditions existed during the Middle and Upper Miocene when temperatures would have been expected to be much colder. These faunas abruptly disappear at the end of the Miocene and are replaced by cool temperate faunas similar to those existing today along the coast of Chile. This sudden faunal change appears to be related to the formation of the west antarctic ice sheet during the latest Miocene and Lower Pliocene and the subsequent introduction of colder subantarctic waters into the Humboldt Current.

B-21562

Kennett, J.P., **Development of planktonic biogeography in the southern ocean during the Cenozoic,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.100-102, 7 refs.

Southern ocean paleontological data have recently been synthesized (Kennett, in press) to evaluate biogeographic evolution, through the Cenozoic, of the planktonic realm at high latitudes of the Southern Hemisphere encompassing water masses south of about 50S (the Subantarctic and Antarctic). The development of biogeographic patterns has been evaluated within a framework of plate tectonism. Continental and plate reconstructions have been made at various intervals of geologic time to evaluate controls on changing circulation patterns and, in turn, the effects these have had on biogeographic evolution. A rather detailed discussion of the biogeographic development of southern ocean planktonic groups through the Cenozoic is presented elsewhere (Kennett, in press). Some highlights of this development are summarized here.

B-21578

Holm-Hansen, O., Azam, F., Campbell, L., Carlucci, A.F., Karl, D.M., **Microbial life beneath the Ross Ice Shelf,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.129-130, 3 refs.

The objectives of biological studies during the RISP 1977-78 field season were to estimate the abundance and biomass of planktonic organisms in the water column beneath the Ross Ice Shelf and to estimate the metabolic activity of the microorganisms in the water column and in the sediments. The results of the observations are summarized. It is indicated that there are viable and metabolically active planktonic populations of organisms in the water column beneath the Ross Ice Shelf.

B-21579

Olson, R.J., **Microbial investigations in the Ross Sea,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.130-131, 7 refs.

The numbers and species of luminous bacteria were determined in water samples and from the guts of marine fish collected in McMurdo Sound. Ninety-six luminous bacterial isolates were obtained. *Photobacterium phosphoreum* accounted for 50% of isolates from the sea water samples and 15% of those from fish guts. Nitrite was found at low levels throughout the upper water column, with no strong relationship to either the nitrate or ammonium concentrations or to the light attenuation profile. The predominant source for nitrite was determined to be ammonium. Nitrogen-15 uptake measurements of phytoplankton samples from a *Phaeocystis* bloom near Ross I. showed that uptake of both nitrate and ammonium was very slow. The biomass of phytoplankton in the water samples was estimated by measurement of adenosine triphosphate, and light attenuation in the water column was measured.

B-21580

El-Sayed, S.Z., Biggs, D.C., Stockwell, D., Warner, R., Meyer, M., **Biogeography and metabolism of phytoplankton and zooplankton in the Ross Sea, Antarctica,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.131-133, 13 refs.

The Texas A and M program focused on the biogeographical distribution, primary production, and metabolic activities of phytoplankton, an extension of the study of ice-algae, and metabolic measurements of zooplankton oxygen utilization and ammonia excretion. Preliminary analysis of the nutrient data showed conspicuously high nitrate, phosphate, and silicate concentrations south of the Polar Front, when compared with subantarctic waters. These nutrients and ammonia also exhibited regional variability in surface waters. Weight-specific ammonium excretion and oxygen consumption rates were higher at the stations north of the Polar Front than at the Ross

Sea stations. Ratios of oxygen atoms consumed to ammonium atoms excreted, however, were not significantly different between subantarctic and antarctic zooplankton. Grazing experiments with krill feeding on natural phytoplankton populations were conducted in cooperation with another krill study.

B-21581

McWhinnie, M.A., Denys, C.J., **Biological studies of antarctic krill, austral summer, 1977-1978,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.133-135.

Biological studies of antarctic krill stocks, collected from the eastern Bellingshausen Sea and the Bransfield Straits and area channels and maintained in separate aquaria at Palmer Station, are reported. The studies include spawning and development of young, molting and its relation to growth rate and longevity, feeding habits and their relation to seasonal growth, and the behavioral role of light. Studies of spawning females indicate that high hydrostatic pressure, as exists at great depths in the water column, is not necessary for spawning or normal development as previously thought. Studies of growth rates support the empirical hypothesis that time to maturity is considerably greater than 2 yr if molting and growth do not occur in winter. On the basis of new data from this study *Euphausia superba* must be classified as omnivorous and predatory rather than an exclusive herbivore as previously thought.

B-21582

Bakus, G.J., Garling, W., Buchanan, J.E., **Antarctic krill: ecology and commercial exploitation,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.135-136, 1 ref.

This article briefly reviews present knowledge on the ecology, distribution, standing stocks, and potential food value of krill, outlines the more important gaps in the knowledge, and discusses commercial exploitation of krill. Management and conservation of the krill resource will become important as harvesting increases. Exploitation of this resource should be well planned and carefully monitored. An international policy and decision-making body for krill management is needed.

B-21583

Dayton, P.K., Oliver, J.S., **Long-term experimental benthic studies in McMurdo Sound,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.136-137, 5 refs.

Long-term studies of the benthic sponge community in McMurdo Sound are reported. The field program has recently been deactivated for a period of 5 to 10 yr due to the very slow rates of growth which necessitate relatively long periods between observations. Over 100 bottom cages include or exclude various predators to evaluate their roles in community organization. These cages are also artificial habitats that collect a unique bottom assemblage which has been manipulated by single-member removal of competing couplets, exposure to light and algal growth, and predator exclusion. Many permanent line transects mark study sites that are photographed to document recruitment, survival, growth, and mortality of large sessile species, especially slow-growing hexactinellid sponges. Other artificial habitats used to collect specific animal assemblages and then manipulated to study interactions among resident species, include plastic panels and settling plates, floaters, tuffie scrubbers, plastic algae, etc. The cooperation of future researchers in avoiding the experimental areas is requested.

B-21584

Dearborn, J.H., **Benthic fishes and echinoderms in the Scotia Arc region,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.137-139, 7 refs.

Investigations of the abundance, species composition, food habits, and feeding rates of demersal fishes and the species composition, food habits and general biology of selected echinoderm groups are summarized.

B-21585

Lipps, J.H., **Benthic marine biology, Ross Ice Shelf Project,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.139-141, 4 refs.

Researchers conducting benthic biology studies under the Ross Ice Shelf expected to find either a typical antarctic fauna or a sparse but diverse fauna. The work revealed neither. The sampling program was successfully completed at J-9 using television, baited traps and lines, and a specially designed sphincter sampler. Mysid shrimp, euphausiids, numerous amphipods *(Orchomene* spp), and an isopod *(Serolis trilobitoides)* were captured or observed on the television.

B-21587

Zink, R.M., **Birds of the Weddell Sea,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.142-145, 5 refs.

The results of pelagic observations of seabirds conducted from aboard the *Glacier* during the International Weddell Sea Oceanographic Expeditions of 1973-1976 are summarized. The Adélie penguin, antarctic petrel, arctic tern, and snow petrel were the most abundant species common to both the 1973 and 1976 studies. These species, in addition to the emperor penguin, cape pigeon, Wilson's storm-petrel, and antarctic prion are probably the primary constituents of the avifauna of the Weddell Sea. Species typical of open seas and those noted primarily on pack ice are discussed separately. Tabular data summarize the distribution of sampling effort on open seas and on pack ice, the relative frequency of each species occurrence and general habitat preference, and density estimates for selected species.

B-21588

Glass, B.M., **Winter observations of birds at Palmer Station in 1977,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.145, 2 refs.

Resident and transient birds were observed, collected, and banded in the vicinity of Palmer Station, Jan. 8 and Dec. 5, 1977. Although notes were taken on all species encountered, efforts were concentrated on the winter social behavior of the southern giant fulmar and the trial use of a new radar system for following migrations and winter feeding flocks of birds. Preliminary analysis of data indicates that intraspecific behavioral interactions that take place in winter may be important in the bird's adaptation to the antarctic environment. Other species observed are noted.

B-21589

Parmelee, D.F., Bernstein, N., Neilson, D.R., **Impact of unfavorable ice conditions on bird productivity at Palmer Station during the 1977-78 field season,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.146-147, 2 refs.

Ecological and behavioral differences in the south polar skua and brown skua were studied under identical environmental conditions. South polar skuas fed mostly at sea, while the brown skua depended almost exclusively on penguin colonies for food. Chick productivity in the south polar skuas fell from a record high in the earlier season to zero during the 1977-78 season, due to unfavorable ice conditions. Terns also experienced a chickless nesting season while gulls produced chicks that died, presumably of starvation. Neither the penguins and shags, nor their respective predators, the brown skuas and sheathbills, showed a noticeable drop in productivity. However, no hybridizing pairs paired and bred successfully that year. The field observations support the hypothesis that south polar and brown skuas have distinctly different feeding requirements in the Palmer area and that unfavorable ice conditions are important barriers to hybridization in the polar environment.

B-21590
Schlichting, H.E., Jr., Speziale, B.J., Zink, R.M., **Dispersal of algae and Protozoa by antarctic flying birds,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.147-149, 27 refs.

Nine of fifteen specimens from birds shot and frozen 3 mo prior to sampling rendered positive cultures containing nine species of algae, nine Protozoa, and 12 fungi. Three arctic terns, three cape pigeons, two giant fulmars, and one south polar skua transported microalgae and/or Protozoa. All species of blue-green algae samples from the arctic terns collected in Antarctica have been collected from pools on Ellesmere I., Northwest Territories, and from antarctic soil, suggesting that these algae, seldom found in atmospheric samples, may be transported between polar regions by birds. South polar skuas banded at Palmer Station have been recovered along the coasts of Argentina and western Mexico and Greenland. Thus, the south polar skua as well as the arctic tern may transport micro-organisms between polar regions, although the skuas examined in this study did not have positive tests for these blue-green algal species. Organisms are not found in all suitable habitats. The birds collected and the microorganisms cultured are listed.

B-21591
Müller-Schwarze, D., Trivelpiece, W., Volkman, N.J., **Behavioral and ecological adaptations in pygoscelid penguins,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.149-150, 3 refs.

The objective of this work was to determine if and how sympatrically breeding pygoscelid penguins partition critical resources, i.e., time, breeding habitat, and food. During the 1977-78 field season, data were collected on breeding success, predator-prey dynamics, interspecific interactions, breeding habitat, food utilization, and rate of chick growth of the Adélies, chinstrap, and gentoo penguins. Preliminary analysis of the data indicates that of the three pygocelids, Adélies and chinstraps have the most similar resource requirements. These two species rarely breed in the same rookery and have very similar displays. Direct competition for breeding habitat between Adélie and chinstrap penguins was observed.

B-21592
Sivak, J.G., **Corneal curvature and amphibious vision in penguins,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.150-151, 5 refs.

Until recently, scientists believed penguins were visually adapted for seeing underwater and were therefore extremely myopic on land. Refractive measurements of the eyes of blackfoot, rockhopper, gentoo, and king penguins reveal that the eye has little or no refractive error in air and low to moderate hyperopia in water. Photokeratoscopic study of corneal curvature shows that the hyperopia induced by movement into water is minimized in penguins by an abnormally flattened cornea. It is further indicated that penguins are capable of augmenting the focusing power of the eye to compensate for whatever hyperopia is introduced in underwater conditions.

B-21593
Strandtmann, R.W., **Three Adélie penguin colonies on the Hobbs coast, and a nesting site of the snow petrel, Marie Byrd Land, Antarctica,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.151-153.

Adélie penguin colonies were observed at Cruzen I., Worley Point on Shepard I., and Mathewson Point, also on Shepard I. The sites visited and the penguin colonies observed are briefly described. Approximate estimates of active nests were: 100 at Cruzen I., 10,000 at Worley Point, and 30,000 at Mathewson Point. No chicks were observed. No evidence of penguins was found at the fourth site visited, Cape Burks. Snow petrels were seen at all the steep and bluff-like exposures visited on Marie Byrd Land, but the only nesting birds were in the Perry Range.

B-21594
Todd, F.S., **Establishment of a high antarctic penguin colony and controlled environment breeding of Adélie penguins (Pygoscelis adeliae),** *Antarctic journal of the United States,* Oct. 1978 13(4), p.153-154, 1 ref.

Forty pairs of Adélie penguins and 20 emperor penguins were airlifted from Ross I. to the artificial high antarctic penguin colony at San Diego. Courtship and breeding activities, and parent/chick behavior were observed in Adélies brought up the previous season. An important facet of the program was the hand-rearing of Adélie penguin chicks hatched in specially designed incubators. Sixty-seven of 80 birds hatched. Hand-feeding was accomplished four or five times a day with syringe. Forty chicks were reared to fledging size.

B-21595
Elliot, D.H., Watts, D.R., Alley, R.B., Gracanin, T.M., **Bird and seal observations at Joinville Island and offshore islands,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.154-155.

Penguin and seal observations at Joinville I. and offshore islands are noted. The species and locality are given. No attempt is made to estimate numbers of birds or the density of nests. Notations, such as common, a few, numerous, etc., are used.

B-21596
Kooyman, G.L., Gentry, R.L., **Seal and emperor penguin survey, Victoria Land Coast,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.156-157.

An aerial survey conducted in helicopter based on the icebreaker *Burton Island* focused on the location of relative densities of the various antarctic seals, the occurrence of pup Weddell seals, and the presence or absence of emperor penguin chicks at the rookeries. Tabular data summarizes the counts made of seals during the survey. Cape Adare was the most diverse area. The farther south into the Ross Sea, the larger the number of Weddell seals. The leopard seals seen were young animals. Only 15 adult emperor penguins were seen during the cruise from Feb. 2nd to 9th. At every emperor penguin rookery site visited, the sea ice upon which the rookeries had been located has disappeared.

B-21597
Müller-Schwarze, D., Waltz, E.C., Trivelpiece, W., Volkman, N.J., **Breeding status of southern elephant seals at King George Island,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.157-158, 11 refs.

A census of elephant seals at Stranger Point, King George I., revealed a main colony and four satellite colonies. The main colony had 4 groups, each with 1 harem bull and from 28 to 52 females. The females had 76 pups. Each satellite colony had a harem bull; one had one peripheral bull, and another had three. Numbers of females ranged from 9 to 42, pups from 4 to 20. The entire eastern snowslope contained 12 bulls, 222 cows, and 114 pups. Additional elephant seals were seen in the distance. Apparently Oct. 12 was near the peak during pupping time. The overall cow to bull ratio at Stanger Point was higher than the Macquarie I. or South Georgia ratios. A small breeding colony exists at Point Thomas in Admiralty Bay.

B-21598
Kooyman, G.L., **Blood chemistry of freely diving Weddell seals,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.158, 2 refs.

Studies were made of the blood chemistry and blood temperature of adult Weddell seals at rest or sleeping, and after they had made voluntary dives under the sea ice. Blood samples were obtained from arterial catheters placed in the foreflippers. The animals were released in a specially cut ice hole below the hut floor, which was also the only accessible breathing hole. The results are being analyzed. There was often little indication that anaerobic metabolism took place during the dives.

B-21599

Thomas, J., Kuechle, V., DeMaster, D., Birney, E., Eldridge, J., **Colonial behavior of the Weddell seal in eastern McMurdo Sound,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.159-160, 3 refs.

Research activities during the 1977-78 field season included population estimates using mark-recapture techniques, observations of annual pup production, investigations of variations in underwater vocalizations during the pupping/mating season, telemetry studies on haulout patterns, and monitoring of post-weaning dispersal of pups. In general pup production in eastern McMurdo Sound has been declining. Studies of haulout patterns indicates sex-related differences as well as difference in time and energy budgets of females with pups vs females without pups. In general, pups stayed close to their birth site and seemed to congregate around areas where they could gain access to the water easily.

B-21600

Siniff, D., **Biota of the antarctic pack ice: R/V *Hero* cruise 77-5,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.161-162.

The work of the season focused on collecting female crabeater and leopard seals for reproductive material depicting various stages of the reproduction cycle, documenting further the social structure and reproductive behavior of crabeater seals, observing daily activity patterns and local movements of crabeater seals at fast-ice concentrations, and investigating crabeater seal behavior at weaning and their interaction with leopard seals. The results are summarized.

B-21601

Friedmann, E.I., **Melting snow in the dry valleys is a source of water for endolithic microorganisms,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.162-163, 10 refs.

The role played by melting snow on endolithic microbial growth on rocks in the antarctic dry valleys has been investigated. Observations suggest that melting snow is a major, or perhaps exclusive, source of water for endolithic microorganisms in the antarctic desert. Like dew in hot deserts, meltwater is available only intermittently: endolithic microorganisms that rely on these water sources periodically undergo stages of desiccation. It appears likely that endolithic microorganisms of the antarctic cold desert are being moistened less frequently than those in hot deserts.

B-21602

Benninghoff, W.S., Benninghoff, A.S., **Airborne particles and electric fields near the ground in Antarctica,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.163-164.

The kinds, numbers, and deposition of airborne particles within 2 m of the ground were investigated at several antarctic sites. The airborne organic particles, derived from indigenous organisms, were relatively few at Arrival Heights and Lake Vanda, still fewer at McMurdo, and absent at South Pole station. Two categories of introduced organic particles greatly outweighed the numbers of native particles: cells and tissue fragments of conifer wood, and clothing fibers, both natural and synthetic. Snow samples collected at South Pole station contained incompletely burned diesel fuel residue and small quantities of mineral grains as well as conifer wood cells and clothing fibers, all presumably introduced by station activity. Electric field studies suggest that during periods of blowing snow and/or dust, greater numbers of airborne particles would tend to be deposited on wet soil or rock surfaces. This principle may be of basic significance in processes of diaspore lodgment and germination.

B-21603

Baust, J.G., Edwards, J.S., Brown, R., **Physiological basis of low temperature tolerance in antarctic insects,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.164-166, 12 refs.

Recent evidence suggests that many insect species rely on mixed-type rather than single-type cryoprotectants that are sequentially synthesized upon cold exposure. Two distinct mechanisms of adaptation have been identified in *Belgica antarctica* and *Cryptopygus antarctica,* at Palmer Station. Preliminary evidence suggests that at temperatures below OC, cryoprotectant accumulation is temperature dependent and independent of nutrient (carbon) source. Cryoprotectants include glycerol, erythritol, fructose, and glucose. At OC the triggers become biphasic. Temperature induces shifts in carbohydrate metabolism such that glycerol is built up. Simultaneously dietary carbon sources cause accumulations of other protective sugars and/or polyhydric alcohols. Other factors that complicate the wintering picture are described.

B-21604

Standtmann, R.W., **Terrestrial arthropods, Marie Byrd Land, Antarctica,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.166-168.

Terrestrial arthropods have been located in Marie Byrd Land where none had previously been reported. The search methods are described. Only one species was found: the mite genus *Nanorchestes,* a prostigmatic mite, one of the smallest and hardiest soil mites known. Some 350 specimens were collected from 19 of 32 outcrops visited. The mite is described.

B-21605

Parker, B.C., Simmons, G.M., Jr., **Ecosystem comparisons of oasis lakes and soils,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.168-169, 8 refs.

The objective of this research was to gain an understanding of the interaction between dry valley (oasis) lakes and their associated soil and glacial meltstream ecosystem, and to assess the importance and magnitude of biotic processes influencing the development and evolution of these arheic antarctic lakes. Ten lakes in southern Victoria Land were surveyed during the 1977-78 austral summer. Most of the lakes had a benthic (attached) algal mat community. Wherever foam was collected, it was very high in chlorophyll, ATP, and cell numbers. In deeper arheic and nonmixing lakes such as Bonney, Vanda, Fryxell, and Chad, much of the fluorescence near the saline bottom was phaeophytin, suggesting a long history of productivity. In contrast, Miers, Joyce, and Hoare, with relatively fresh bottom water, had little phaeophytin. Phosphate in all lakes was scarce relative to certain potential nutrients. Phosphorus-33 uptake data suggest that phosphorus may be the major nutrient limiting productivity in these lakes. The high diversity of algal and microfaunal species from the lakes was unexpected. The first psychrophilic freshwater algae from Antarctica have been obtained. Despite the high concentrations of NO3 and NH4 ions in glacial ice and lake water, acetylene reduction studies showed that nitrogen fixation by benthic algal mats takes place.

B-21641

Landrum, B.J., **Polar biological specimens,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.223-224.

The Smithsonian Oceanographic Sorting Center continues to serve the National Science Foundation as a center for the processing,

recording, curation, and distribution of polar biological specimens. Antarctic specimens processed here include most of the collections of marine invertebrates, algae, and some ichthyoplankton made on the *Eltanin, Hero, Islas Orcadas,* and some from various icebreakers. Some nearshore and intertidal collections were also processed. Over 60,000 specimens of invertebrates and algae were shipped to investigators this year. Major efforts were focused on receiving, curating, and documenting specimens of polychaet worms and sponges collected under the USARP. Available biological data are stored on magnetic tape. Activities include curating collections of unstudied taxa, classifying certain selected groups to lower taxonomic levels, and sorting other groups to more readily useful levels.

B-21649

Omura, H., **Preliminary report on morphological study of pelvic bones of the minke whale from the Antarctic,** *Tokyo. Whales Research Institute. Scientific reports,* Dec. 1978 No.30, p.271-279, 7 refs.

In the 1976-77 season a total of 51 pairs of the pelvic bone of the minke whale from the Antarctic has been collected for morphological study. These suggested some doubt on sexual dimorphism of bones, which was affirmed in the North Atlantic population. The size of bones is thought to be smaller than in the North Atlantic. The most interesting point, however, is the presence of ossified remnant of the femur in some specimens. Final conclusion is deferred, beause more samples have been collected in the 1977-78 season and these are still under study. (Auth.)

B-21650

Kagei, N., Asano, K., Kihata, M., **On the examination against the parasites of antarctic krill, *Euphausia superba*,** *Tokyo. Whales Research Institute. Scientific reports,* Dec. 1978 No.30, p.311-313, Refs. p.312-313.

To ascertain whether *Euphausia superba* samples contained parasites that might prove a human health hazard, the authors examined large samples of frozen krill. They were negative for the larvae of *Anisakis* and other parasites found in many marine animals and in euphausiids of the northern seas.

B-21658

Hochachka, P.W., **Unusual maternal-fetal blood glucose concentrations in Weddell seal,** *Nature,* Feb. 1, 1979 277(5695), p.388-389, 8 refs.

Fetal whole blood glucose levels are usually lower than, and fluctuate with, maternal levels. This situation is apparently reversed in the Weddell seal. The concentration of glucose in maternal whole blood is lower than that in fetal blood during at least three metabolic states: in the resting-fasting state, in simulated diving, and in recovery from diving. One factor contributing to this unusual relationship between maternal and fetal blood glucose is the relatively low gradient between normal blood levels in fetus and mother. Neither mother nor fetus is likely to be disadvantaged by having a relatively low carrying capacity for glucose in the blood. (Auth.)

B-21659

Scientific Committee on Antarctic Research, **Biological Investigations of Marine Antarctic Systems and Stocks (BIOMASS). Vol. 1: Research proposals,** Aug. 1977, 79p., Refs. passim.

After an introduction discussing the history and purposes of SCAR/SCOR and the general objectives of the BIOMASS program, the proposed research programs are outlined: physical, chemical and biological environments; krill; marine mammals and birds; fishes; cephalopods; benthic invertebrates; seaweeds; and remote sensing. Practical implementation of the suggested programs is covered under the following topics: seagoing activities of research vessels; other ship-based programs; shore-based studies; data reporting and processing. Administration, planning, and coordination of all efforts by international groups are discussed.

B-21706

Bogdanov, A.S., Liubimova, T.G., **Studying Southern Ocean biological resources** [Izuchenie biologicheskikh resursov IUzhnogo okeana], *Antarktika; doklady komissii,* 1978 No.17, p.226-236, In Russian. 52 refs.

By focusing on basic research done by the Soviet Antarctic Expedition, by using *Discovery* reports and by analyzing materials of regional fishery research groups, the authors identify the high productivity areas in the Southern Ocean and the basic reasons for bioproductivity of many of them. It is well established that the prime consideration in Southern Ocean productivity is the Antarctic Circumpolar Current, which exerts a complex influence on distribution of biogenic elements, ocean features, phytoplankton and marine organisms. Involved study of marine biocenoses has revealed fundamental characteristics of distribution, population dynamics, and biology of many species and groups of fauna. The feasibility of harvesting antarctic resources, especially krill, is discussed.

B-21719

Brown, S.G., **Thirtieth annual meeting of the International Whaling Commission, 1978,** *Polar record,* Jan. 1979 19(121), p.386-390, 5 refs.

The thirtieth annual meeting of the IWC is reported on. The revised classification of stocks has added sei whales in Southern Hemisphere Areas I and IV to the protected lists; this means that this species is protected throughout the Southern Hemisphere. Catches 1977, 1977-78 and catch limits for the antarctic seasons and proposed new catch limits are listed. Pelagic whaling in the Antarctic was carried out by one Japanese and two Russian expeditions, using 34 whale catchers.

See also:
A-19515 A-20058 A-20196 A-20272 A-20289 A-20353 A-20354 A-20578 A-20588 A-20812 A-20938 A-20939 A-20940 A-20941 A-20942 A-20962 A-20963 A-20964 A-20966 A-20968 A-21175 A-21449 D-20974 D-21444 E-19281 E-19282 E-19296 E-19350 E-19372 E-19418 E-19419 E-19423 E-19465 E-19466 E-19636 E-19637 E-19643 E-19644 E-19664 E-19667 E-19668 E-19669 E-19670 E-19671 E-19672 E-19874 E-19988 E-19998 E-20000 E-20137 E-20141 E-20142 E-20547 E-20552 E-20563 E-20564 E-20565 E-20566 E-20567 E-20568 E-20631 E-20755 E-20756 E-20803 E-20804 E-20847 E-20860 E-21085 E-21096 E-21180 E-21195 E-21215 E-21238 E-21502 E-21512 E-21514 E-21515 E-21517 E-21518 E-21559 E-21560 E-21561 E-21563 E-21564 E-21565 E-21567 E-21569 E-21570 E-21571 E-21573 E-21574 E-21575 E-21576 E-21586 F-19676 F-19678 F-19706 F-19915 F-20033 F-20114 F-20306 F-20332 F-20485 F-20489 F-20726 F-21094 F-21544 G-19984 G-20715 G-20967 G-20970 G-20972 G-20973 G-20976 H-19303 H-20325 H-20866 H-21606 H-21607 I-20184 I-21188 J-19274 J-19334 J-19632 J-19914 J-19942 J-20022 J-20039 J-20230 J-20518 J-20579 J-20617 J-20805 J-20932 J-20933 J-21022 J-21452 J-21545 M-20189 M-20324 M-20379 M-20380

C. CARTOGRAPHY

C-19279
Summary of a survey report by P.M. Otway, surveyor with the southern party, N.Z. Geological and Survey Expedition, 1961/62, *New Zealand surveyor*, Sep. 1963 No.224, p.160-166.

This is a summary of work carried out by New Zealand surveyors in an effort to produce 1:250,000 topographic reconnaissance maps. Field work in triangulation and astro observations is described, as well as the office computations used to work up the data. Excellent agreement between the two triangulation methods was achieved and astro results were adequate to position triangulation on graticules. Tellurometer positions taken by the U.S. Geological Survey were used for positioning the network.

C-19500
Meier, S., **Geodetic observation methods for surveying and monitoring Antarctic outflow glaciers** [Geodätische Beobachtungsverfahren zur Erforschung und Überwachung antarktischer Ausflussgletscher], *Vermessungstechnik*, Oct. 1975 23(10), p.373-374, In German with English and Russian summaries.

This note introduces a group of 5 papers (see 32-1704 through 32-1708, or C-19501 through C-19505) dealing with geodetic studies conducted on Hays Glacier during the 17th Soviet Antarctic Expedition, 1972-73. Large scale surface relief was studied from aerial photographs, medium scale features by trigonometric leveling supplemented by barometric profiling, and the finest features by geometric leveling. Ice movements were observed both from the air and the ground. In general, ground measurements have not lost their significance, even in view of the effectiveness of aerial methods.

C-19501
Eger, R., **Survey of a traverse on the Antarctic inland ice** [Messung einer Traverse auf dem antarktischen Inlandeis], *Vermessungstechnik*, Oct. 1975 23(10), p.374-376, In German with English and Russian summaries. 5 refs.

Measurements made during a 120 km traverse and repeated seven months later, using an EOK 2,000 electro-optical telemeter are reported. The effectiveness of the instrument is evaluated. The unusual atmospheric conditions prevailing in Antarctica have both favorable and unfavorable effects on the measurements. For the same paper from a different source see 30-3099 or 8C-16432.

C-19502
Dietrich, R., **Measurements of a barometric altitude profile in Enderby Land, Antarctica** [Aufnahme eines barometrischen Höhenprofils im Enderby-Land, Antarktika], *Vermessungstechnik*, Oct. 1975 23(10), p.376-379, In German with English and Russian summaries. 4 refs.

The surface profile of the Hays Glacier area was measured by a German group of geodesists attached to the 17th Soviet Antarctic Expedition. Reference points determined trigonometrically were used in conjunction with a barometric method. The method is described in detail. The accuracy obtained was of the order of plus or minus 1.0-1.5 m, including the error in trigonometric height determination.

C-19503
Dressler, K., **Photogrammetric studies of a group from the G.D.R. during the 17th Soviet Antarctic Expedition** [Photogrammetrische Arbeiten der DDR-Gruppe während der 17. Sowjetischen Antarktisexpedition], *Vermessungstechnik*, Oct. 1975 23(10), p.380-382, In German with English and Russian summaries. 5 refs.

Special problems involved in the use of photogrammetric methods in Antarctica are discussed, considering such factors as illumination, space perception, refraction and temperature. As a result of photogrammetric measurements longitudinal and transversal profiles were obtained over a large portion of the crevasse areas of Hays and Campbell glaciers. The highest flow rates obtained are 3.8 m/day for Hays Glacier and 1.0 m/day for Campbell Glacier. Existing 1:200,000 maps were corrected and a new group of nunataks was surveyed.

C-19504
Meier, S., **Accuracy of trigonometric leveling above ice at stable stratification of temperature and refraction** [Zur Genauigkeit der trigonometrischen Höhenmessung über Eis bei stabiler Temperatur- und Refraktionsschichtung], *Vermessungstechnik*, Oct. 1975 23(10), p.382-385, In German with English and Russian summaries. 4 refs.

Tables of local refraction coefficients above plane tempered ice surfaces are tested as to their practical usefulness, with the help of effective coefficients derived from a series of measurements made near the edge of the ice sheet at Molodezhnaya Station. In the presence of stable refraction, which usually occurs at air and ice temperatures near the freezing point during the polar summer near the coast, local coefficients yield accuracies of height determination that compare favorably with those of middle latitudes.

C-19505
Dietrich, R., **Studies of barometric leveling in Antarctica** [Untersuchungen zur barometrischen Höhenbestimmung in Antarktika], *Vermessungstechnik*, Oct. 1975 23(10), p.385-388, In German with English and Russian summaries. 6 refs.

An attempt is made to reduce model errors in barometric height determinations at the edge of the antarctic ice sheet by using one value of free atmosphere temperature at a time. Measured values are divided into two groups according to meteorological conditions. Group No.1 (with little or no cloudiness, no precipitation, katabatic wind, low temperature and medium or high pressure) appears to be the prevalent group for the available field work. For this group a reduction of the model error by about 50% was achieved. For measurements in Group No.2 (with low clouds, frequent precipitation, stable wind, high temperature and low or medium pressure) there was no significant improvement in accuracy. Possible sources of the remaining error are: 1) underestimated average temperature of the column of air, 2) systematic errors of the aneroid barometer, and 3) incomplete assessment of the influence of horizontal pressure gradients.

C-19579
Usanov, F.F., **Glacial surface marking trials** [Opyt markirovaniia lednikovykh poverkhnosteĭ], *Geodeziia i kartografiia*, Aug. 1977 No.8, p.46-47, 3 refs. In Russian.

Tests using plastic and paper bags of a coal-dust-benzene mixture for marking antarctic glacial surfaces for aerial photography are de-

scribed. Drop flights should be made within half an hour of photography to ensure synchronicity. Workers were satisfied with the results. The benzene mixture can be replaced by coal dust combined with any volatile material or by tar, which must be used with glass containers.

C-19675

MacDonald, W.R., **Antarctic cartography,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.125-127.

The antarctic cartographic achievements of this program over two decades are summarized as well as the field mapping operations for the 1976-77 austral summer. Efforts have resulted in the mapping of 1,410,000 sq km of previously unmapped territory. 1976-77 field operations included Doppler point positioning for geophysical and glaciological investigations in support of the Ross Ice Shelf Geophysical and Glaciological Survey and continued year-round Doppler and seismological investigations at Amundsen-Scott Station. Sixty-three sites were occupied with the JMR receiver and 39 with Geoceiver apparatus. Work continued on a new topographic map series at 1:-50,000 scale of the dry valley area. Seven maps at 1:250,000 scale have been published during the past year and work is continuing on the final two 1:250,000-scale topographic maps in the Kohler Range area and on a 1:500,000-scale sketch map of Palmer Land.

C-19753

Apostolescu, V., **Presentation of the 1:2,500,000 geologic map of Antarctica** [Présentation de la carte géologique de l'Antarctique au 1/2,500,000], *Institut français du pétrole. Revue,* July-Aug. 1977 32(4), p.665-670, In French.

A new geological map (1:2,500,000) has been issued by the French Petroleum Institute (IFP) and the National Center for Ocean Exploitation (CNEXO). Based on LANDSAT imagery, the map provides information on the stratigraphic and tectonic evolution of Antarctica since the Archean.

C-19993

World map series [Karta mira], Oxford, Pergamon Press, 1973, 234 sheets, In Russian and English.

DLC G3200S.2500.K3

This set of 234 maps has been produced by the combined efforts of the Geodetic and Cartographic Departments of the governments of the U.S.S.R., German Democratic Republic, Hungary, Poland, Czechoslovakia, Bulgaria and Romania. The maps are uniformly based on the metric system and drawn to a scale of 1:2,500,000. Sheet 192 shows the Tristan da Cunha group, Sheet 195 the Crozet Islands, Sheet 198 the Australian-Antarctic Rise, and Sheets 203-234 the Southern Ocean and the Antarctic continent.

C-20341

Mal'tsev, V.N., Pavlov, A.A., Vaĭgachev, A.Z., **Geodetic work in Alasheyev Bight,** Seventh voyage of the R/V Ob',.1961-62, Jerusalem, Israel Program for Scientific Translations, 1968, p.175-178, TT 68-50312, For Russian original see 3C-4114.

Topographic surveys were conducted during 1962 along the coast of Alasheyev Bight in the Molodezhnaya Station area to establish geodetic control for ground and aerial surveys and for navigational aids in the passage to the coast. The geodetic network covers 15 sq km, with Molodezhnaya Station located in the center.

C-20355

U.S. Central Intelligence Agency, **Polar regions: atlas,** Washington, May 1978, 66p., Includes two foldout maps.

This oversize, paper-bound atlas is divided into two sections, the second of which deals with the Antarctic. Topics covered in the text are: antarctic issues; the continent; climate; sea ice; early exploration; IGY; sovereignty problems, 1900-1959; the Antarctic Treaty; science programs; stations; transportation; environmental protection; sealing; whaling: fish and krill; and minerals. A detailed gazetteer and index is provided, and the entire work is copiously illustrated.

C-20886

Zögner, L., **Cartographic representation of the polar regions up to and including the 19th century** [Die kartographische Darstellung der Polargebiete bis in das 19. Jahrhundert], *Erde,* 1978 109(2), p.136-152, In German with English summary. 38 refs.

Important periods in the progress of polar research and the development of geographical knowledge of the polar regions are illustrated by characteristic maps. Legends such as a terra australis and an Arctic Ocean open on all sides affected polar cartography for a long time. The geographical theories of Delisle/Buache in the 18th and A. Petermann in the 19th centuries influenced cartographic representation. In the 19th century successful research in polar regions and the use of modern scientific methods were matched by a rapid increase in knowledge and constant improvement of map faces. (Auth.)

C-21083

Dressler, K., Brunner, H., **"Mountains of German-Soviet friendship" in Enderby Land (Antarctica)** [Die "Berge der Deutsch-Sowjetischen Freundschaft" im Enderby-Land (Antarktika)], *Petermanns geographische Mitteilungen,* 1977 121(1), p.71-78, In German with English and Russian summaries. 11 refs.

The GDR participants in the 17th Soviet Antarctic Expedition of 1971/72 did geodetic and glaciological work in Enderby Land. Within the scope of that work, geodetic observation points on the mountain group were determined with high accuracy. The stay at these nunataks was used to execute a terrestrial-photogrammetric survey, outside the expedition program. A topographic map at a scale of 1:10,000, covering 20 sq km of rock and firn surface, was drawn up after plotting and preparing of the photograms. This work is supplemented by a description of relief, geology, glaciology, climate, flora, fauna, and the possibilities of development. (Auth.)

C-21393

Dressler, K., **Some problems of photogrammetry in Antarctica,** *Jena review,* 1975 No.2, p.88-92, back cover, 10 refs.

An aerophotogrammetric method used during the 17th Soviet Antarctic Expedition to determine topographic features of a traverse of 100 km length with side lengths of 3 to 5 km is described. Difficulties encountered because of frequent snowstorms, low air temperature, poor visibility and excessive albedo are discussed. About 140 stereomodels and 36 single photographs were taken from 25 bases in 76 directions, using a 19/1318 Phototheodolite. To reduce errors in aerophotogrammetry the following suggestion is made: the tracks of sledges are distinctly recognizable in the aerial photograph. If the caterpillar tractor moves around the geodetic fixed points in a circle, the tracks can serve as ground control points of maximum accuracy visible from the air. The photographic flight should be carried out as soon as possible after having finished this marking work.

C-21463

Dittrich, G., Helwig, A., **Geodetic and meteorological investigations of ground refraction over antarctic continental ice** [Geodezicheskie i meteorologicheskie issledovaniia zemnoĭ refraktsii nad poverkhnost'iu antarkticheskogo materikovogo l'da], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1978 Vol.69, p.100-119, In Russian. 10 refs.

Preliminary results of investigations into the effect of ground refraction on accuracy of vertical angles and distance measurement in

Antarctica are given. Studies were done by a group of meteorologists and geodesists by means of simultaneous geodetic and meteorological observations at three fixed points under various weather conditions. The coefficient of refraction was computed from vertical gradient air temperature data, then compared with the refraction coefficient from geodetic readings. Thus can the effect of ground refraction on accuracy in high southern latitudes be assessed.

C-21702

Grushinskiĭ, N.P., Sazhina, N.B., Nikitina, I.S., Torochkova, G.I., **Antarctic gravity anomaly map** [Karta anomalii sily tiazhesti Antarktidy], *Antarktika: doklady komissii*, 1978 No.17, p.199-203, In Russian. 25 refs.

A gravimetric map of Antarctica (scale 1:5,000,000) compiled with data collected over the past 20 years is described. The map was drawn up in two versions, depending on how altitude of test points was determined—by free atmosphere pressure or by Bouguer data. The materials used are briefly reviewed.

See also:
A-20938 E-19400 E-19401 E-19797 F-19477 F-19818 F-19861 F-20157 F-20171 F-20414 F-20458 F-20459 F-20488 F-20521 F-20751 F-20865 F-20881 F-21066 F-21156 L-19651 L-19854

D. EXPEDITIONS

D-19767
Takagi, S., **Members of the 1st JARE—samurai** [Nankyoku no samurai tachi], *Polar news*, Jan. 1978 No.26, p.30-36, In Japanese.

The personal profiles and activities of the 30 members of the first JARE are described by a newsman who participated in the effort. He praises the resourcefulness, stamina and courage of these early workers, and compares them to the classical Japanese warrior class.

D-19768
Nishibori, E., **First wintering party of the JARE** [Saisyo no etto-tai], *Polar news*, Jan. 1978 No.26, p.37-42, In Japanese.

The author was the leader of the first wintering party of the JARE, dispatched to accomplish the scientific programs of the International Geophysical Year in 1957-58. This is a description of its activities, the first at Showa Station. Preliminary studies of puddles forming below the freezing point and of auroras were carried out. In the spring a brief reconnaissance by dog sled was made along the coast of Lützow-Holm Bay to locate a landing point on the ice sheet. During the trip the party encountered many strange phenomena and was especially surprised to find water vapor rising out of a cave in the ice. Descriptions are also given of logistics and the dogs attached to the group.

D-19774
Kaminuma, K., **Programs and profiles of the 19th JARE, 1977-1978** [Dai 19 ji Nankyoku-kansokutai no keikaku to yokogao], *Polar news*, Jan. 1978 No.26, p.63-66, In Japanese.

This is an introductory report on the projects and members of the 19th JARE by a member of the summer party. He describes the people attached to the group and outlines the IMS project, which is the main theme for the 17-19th JARE's.

D-19882
Ignatov, V.S., **Main results of the 19th Soviet Wintering Expedition** [Osnovnye rezul'taty rabot Deviatnadtsatoĭ zimovochnoĭ sovetskoĭ antarkticheskoĭ ekspeditsii], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten'*, 1977 No.96, p.5-12, In Russian.

The wintering party of the 19th SAE was one of the largest in its history—226 participants, including 6 foreign specialists. A resume of the work done at each of the Soviet stations is given. Examples of international cooperation, such as Soviet use of data from American satellites and a study of the effect of terrestrial atmospheric refraction on vertical angle measurements carried out with the Germans, are highlighted.

D-20019
Stanley, A., **Wilkes Expedition,** *NOAA*, Oct. 1971 1(4), p.30-34.

A set of 27 copperplate engravings at the National Ocean Survey memorializes the U.S. Exploring Expedition led by Commander Charles Wilkes from 1838 to 1842. The expedition explored the south polar region, the Pacific, around the Cape of Good Hope, and across the Atlantic. It lasted 3 yr and 10 mo and covered 87,780 mi. One of the major accomplishments was confirmation of the existence of the Antarctic Continent. The Wilkes engravings played an important role in the development of copper engraving since the record indicates that they were executed prior to all but the earliest of the engraved charts of the National Ocean Survey.

D-20088
Kokubun, S., **Activity of the summer party of the 18th JARE in 1976-1977,** *Antarctic record*, Mar. 1978 No.61, p.75-92, In Japanese with English summary.

Summer operations of the 18th Japanese Antarctic Research Expedition are outlined, with a brief description of the expedition's mission. The icebreaker *Fuji*, carrying 500 tons of cargo and equipped with three helicopters and an airplane, left Tokyo on November 25, 1976, with 40 members. Scientific programs on board the *Fuji* were largely continuations from previous years: oceanographic and biological observations, and measurement of HF radio wave intensities were carried out throughout the voyage, and aerosol measurements were made from Tokyo to the edge of the fast ice near Lützow-Holm Bay. Several field research parties were sent to exposed rocks and saline lakes along the coast of Lützow-Holm Bay to make geological, geochemical and ground surveys. (Auth. mod.)

D-20254
Accident-plagued 1974-75 antarctic campaign [La accidentada campaña antártica 1974-75], *Antártida*, June 1975 No.6, p.18-20, In Spanish.

Driven onto rocks by heavy seas and winds, the *Bahía Aguirre*, transport for the 1974-75 Argentine Antarctic Expedition, sustained damage to her hull near the bow. The icebreaker *San Martín* was sent to relieve the stricken ship but became icebound in the Erebus and Terror Gulf. The United States then sent helicopters to evacuate scientific personnel to the icebreaker *Glacier;* the *Burton Island* took them back to Marambio Base. Argentine ships later relieved both ships after strenuous efforts to break through the pack.

D-20259
Leal, J., **The army goes to the South Pole** [El ejército llega al Polo Sur], *Antártida*, June 1975 No.6, p.32-38, In Spanish.

Operación 90, code name for the Argentine Continental Expedition to the South Pole in 1965, was led by Jorge Leal. Here he recalls some of the high points of Argentina's first penetration to the southern extent of the land over which she claims sovereignty. The objectives of the effort were both political and scientific.

D-20261
Fortunate route of James Weddell [La afortunada ruta de James Weddell], *Antártida*, June 1975 No.6, p.44-47, In Spanish.

Except for his journal of his southern voyages, very little literature is available on the life of James Weddell. Using excerpts from this book, the article traces his accomplishments—sailing south to 74 deg 16', exploring the South Shetlands, and mapping both ice and land areas in the region around the South Orkneys.

D-20303
Transglobe Expedition 1976-1980, Unidentified manuscript., var. p.

This is a collection of handouts setting out the aims, schedule, and scientific program of the 1976-1980 Transglobe Expedition, to be sponsored by a number of British research institutions. The purpose of the project is to complete the first circumnavigation of the world longitudinally, along the Greenwich Meridian. A number of new types of equipment, clothing, food and other necessities will be used by the expedition party; a list of the companies supplying the expedition is included.

D-20348

Delépine, G., **Voyages to the Kerguelens from the time of their discovery until their becoming a territory** [Les voyages aux Iles Kerguelen depuis la découverte jusqu'à la constitution du territoire], *France. Ministère d'Etat chargé des départements et territoires d'outre-mer. Terres australes et antarctiques françaises*, Aug.-Sep. 1976 No.68-69, p.5-20, In French. Refs. p.17-20.

Not only French but also British, German, American and other expeditions, whaling parties, and other groups who sailed to or near the Kerguelen Islands are reviewed. The documents on which the study is based are listed, their locations given.

D-20349

Patriat, P., Hureau, J.C., Arnaud, P.M., Leclaire, L., Duplessy, J.C., **Oceanographic activities in the French austral and antarctic territories** [Activités océanographiques dans les T.A.A.F.], *France. Ministère d'Etat chargé des départements et territoires d'outre-mer. Terres australes et antarctiques françaises*. Aug.-Sep. 1976 No.68-69, p.21-40, In French.

The four most recent cruises of the oceanographic research vessel the *Marion Dufresne* are summarized by their scientific directors. For each voyage the objectives, itinerary, and preliminary results are briefly reviewed. Although the seventh cruise did not reach south into subantarctic waters, the other three did.

D-20850

Charcot, J., **Voyage of the *Pourquoi-pas:* the journal of the Second French South Polar Expedition, 1908-1910,** Hamden, Conn., Archon Books, 1978, 315p.

DLC G850 1908.C4813 1978

The second French antarctic expedition to the west coast of the Antarctic Peninsula, led by Commandant Charcot (1867-1936),explored 3,000 km of unknown coastline, discovering Fallieres Land and Charcot Land. In addition to their survey work and mapping under sail without fixes on land, Charcot's antarctic expeditions produced an extremely rich harvest of scientific observation in the fields of meteorology, glaciology, geology and, especially, zoology.

D-20919

Askin, R., Barrett, P., Kyle, P., Laird, M., **Immediate report of the Victoria University of Wellington Antarctic Expedition, 1971-1972,** Mar. 1972, 37p.

DLC G850 1971.C5V5

This report has been prepared for the benefit of the University Council of Victoria University, the University Research Grants Committee, the Ross Dependency Research Committee, and individuals who have assisted the expedition in the execution of its research program. The report contains maps of work areas in the McMurdo Sound and Mackay Glacier-Skelton Neve regions, and of sledge routes in the Evans Neve area; preparations for the expedition; a list of expedition members, financial items; scientific achievements; a narrative account of the expedition; division of time summary; details of field transportation; and three appendixes outlining flight requirement, itinerary, and weather conditions.

D-20974

Hamburg, Federal Republic of Germany. Bundesforschungsanstalt für Fischerei, **Antarctic expedition of 1977-1978 in preparation** [Antarktis-Expedition 1977/78 in Vorbereitung], *Informationen für die Fischwirtschaft*, 1977 24(5), p.143-144, In German.

A new expedition from Germany to antarctic waters in the 1977-1978 summer is in preparation. The main task of the expedition is to study marine food resources in the Antarctic.

D-21181

Marra, J., **Journal of the Resolution's voyage in 1771-1775,** Bibliotheca Australiana No.15, Amsterdam, N. Israel, 1967, 328p.

DLC G420.E37M3 1775a

This volume contains the journals of the *Resolution's* voyage, 1772-1775, under the command of Captain James Cook, and the *Adventure's* voyage, 1772-1774. The account describes the separation of the two ships and the incidents that befell each, interspersed with historical and geographical descriptions of the islands and countries discovered. The voyage of the *Resolution* proved the non-existence of an undiscovered continent between the Equator and 50S.

D-21444

Sahrhage, D., **Course of the Antarctic Expedition of the Federal Republic of Germany** [Fahrtverlauf], *Archiv für Fischereiwissenschaft*, July 1978 Vol.29, Beiheft 1, p.14-22, In German.

The voyage of the R/V *Walther Herwig* and trawler *Weser*, which were used by the Antarctic Expedition of the Federal Republic of Germany, started on Oct. 10, 1975, from Bremerhaven to the South Atlantic Ocean for scientific and commercial research on krill and ended there on June 14, 1976. Three parts of the field work (Nov. 16, 1975-Jan. 13, 1976; and Mar. 18-May 20, 1976) in the Scotia and Weddell Seas are briefly described.

D-21718

Private research expedition to Antarctica, 1977-78, *Polar record*, Jan. 1979 19(121), p.378-379.

A privately sponsored 8-man expedition under the leadership of Dr. David Lewis, who had sailed single-handed to the Antarctic five years ago, set out to measure sea temperature and salinity near icebergs, to collect biological and geological specimens, and to assess the efficiency of such small, low-cost expeditions for future work. The expedition accomplished a number of objectives, covered over 6,000 nautical miles and cost less than $27,000 (Australian).

See also:
A-19306 A-19363 A-19493 A-19778 A-19799 A-20196
A-20793 A-20887 A-20942 A-20962 A-20963 A-20964
A-21076 B-21443 C-19279 F-20172 G-19731 G-19732
G-19734 G-20415 G-20416 1-19735 J-19619 J-20328

E. GEOLOGICAL SCIENCES

E-19250
Barrett, P.J., **Post-glacial Permian and Triassic Beacon rocks in the Beardmore Glacier area, central Transantarctic Mountains, Antarctica,** Columbus, Ohio State University, 1968, 510p. + maps, University Microfilms order No.69-11,605, Ph.D. thesis. Refs. p.505-510.

The post-glacial Permian and Triassic sequence in the Beardmore Glacier area is about 2,200 m thick and comprises five formations. The Mackellar, Fairchild and Buckley Formations are Permian, and the Fremouw and Falla Formations are Triassic in age. The overlying Triassic?-Jurassic Ferrar Group includes a largely volcanic unit, the Prebble Formation, which has affinities with both the Beacon rocks below and the basalts above, the Kirkpatrick Basalt and the Ferrar Dolerite. Approximately 3,000 paleocurrent measurements were taken in sets of about six from stratigraphic intervals less than 30 m thick from the five Permian and Triassic formations. These data yielded 432 current directions, 168 from small-scale cross-bedding, 162 from medium-scale cross-bedding, 69 from parting lineation, and 33 from logs, ripple marks and slump folds. Four formations have essentially a unimodal current pattern, while the Buckley Formation has a centripetal pattern. (Auth. mod.)

E-19254
Hayes, D.E., ed, Circum-Antarctic Marine Geology Symposium, Sydney, Australia, August 18-19, 1976, **Circum-Antarctic marine geology,** *Marine geology,* Oct. 1977 25(1/3), 277p., Numerous refs. For abstracts of papers see E-19255, E-19256, E-19258 through E-19260, E-19262 through E-19265, J-19257, and J-19261.

This symposium was held as part of the 25th International Geological Congress. The eleven contributions comprise a mix of local and regional studies that focus mostly on the Pacific-Indian sector of the Southern Ocean lying between 60W and 70E. Most of the papers have an implicit global scope by virtue of the fact that they address questions of paleocirculation, paleoclimates, initiation of antarctic glaciations, continental reconstructions, and distributions of primary productivity zones.

E-19255
Andrews, P.B., **Depositional facies and the early phase of ocean basin evolution in the circum-Antarctic region,** *Marine geology,* Oct. 1977 25(1/3), p.1-13, 28 refs.

Many Deep Sea Drilling Project drillholes in circum-Antarctic regions penetrated a basal euxinic claystone facies. The facies is dark-colored, organic carbon and pyrite-rich, very sparsely fossiliferous, massive to burrow-mottled detrital claystone and silty claystone. At some sites redeposited silt and sand is intercalated with the facies. The facies accumulated relatively rapidly, under stagnant or restricted circulation bottom conditions. On subsided fragments of continental crust (Falkland Plateau, Campbell Plateau) the euxinic claystone facies succeeds transgressive non-marine to marine sequences; in near-continent positions it overlies the oldest oceanic crust. The former relationship appears to mark the rifting phase and the latter the early spreading phase of ocean basin development in circum-Antarctic and other Southern Hemisphere regions. Persistent oceanic biogenic sediment eventually succeeds the claystone facies at each drillsite. In the younger parts of an ocean basin biogenic sediment lies directly on oceanic crust. The change from claystone to biogenic sediment occurs earliest in first-formed oceanic basins and latest in young basins. The change appears to mark the moment when each basin had grown to sufficient size through sea-floor spreading for a thermohaline circulation to develop. (Auth.)

E-19256
Barker, P.F., Burrell, J., **Opening of Drake Passage,** *Marine geology,* Oct. 1977 25(1/3), p.15-34, 43 refs.

Marine magnetic anomalies are used to deduce the history of the opening of Drake Passage, the deep-water channel between South America and West Antarctica. Coherent spreading started in Drake Passage at anomaly 8 time (about 29Ma), after an earlier, chaotic episode. In the early stages of opening, overlap of two shallow ridges at the Shackleton Fracture Zone confined the submarine connection between Pacific and Atlantic to shelf depths, but the cross-section grew rapidly after the ridge ends cleared at about 23.5 Ma. Reflection profiles from Drake Passage are used to support the existence of these ridges at that time. By comparison with other regions around Antarctica it is shown that the final barrier in an otherwise-complete deep circumpolar path lay at the Shackleton Fracture Zone; subsequently, the gap of smallest cross-section lay either always at the Shackleton Fracture Zone or possibly, for part of the time, in the developing East Scotia Sea. It is concluded that the Antarctic Circumpolar Current started at 23.5 Ma, a time indistinguishable from the Oligocene-Miocene boundary. (Auth.)

E-19258
Davey, F.J., Houtz, R.E., **Campbell Plateau and its relationship with the Ross Sea, Antarctica,** *Marine geology,* Oct. 1977 25(1/3), p.61-72, 40 refs.

Reconstructions of Gondwanaland place the Campbell Plateau adjacent to the eastern Ross Sea continental shelf and western Marie Byrd Land prior to approximately Late Cretaceous times. Seismic reflection data show that many basement structures on the Campbell Plateau trend in an approximately northeast-southwest direction, parallel to the axis of rifting of New Zealand from Antarctica. The only structures which may have been continuous in pre-rifting times are the Campbell Basin, underlying the southwest part of the Campbell Plateau, and a deep sedimentary trough underlying the eastern Ross Sea. A linear belt of large-amplitude magnetic anomalies trends east-west across the northern Campbell Plateau, apparently crossing the eastern shelf edge obliquely. They are probably caused by magnetic rocks of pre-Late Cretaceous age. (Auth.)

E-19259
Fillon, R.H., **Ice-rafted detritus and paleotemperature: Late Cenozoic relationships in the Ross Sea region,** *Marine geology,* Oct. 1977 25(1/3), p.73-93, 42 refs.

Four *Eltanin* piston cores spanning 66S to 71S along a meridian which passes through the Ross Sea have been used to compare paleotemperature records based on radiolarian faunas with ice-rafted detritus (IRD) accumulation rates. Biostratigraphic/magnetostratigraphic core-bottom ages range from 0.7 m.y.B.P. to 3.2 m.y.B.P. Paleotemperature variations are clearly correlatable from core to core, while fluctuations in IRD accumulation rates at these sites show slight correspondence. Paleotemperature and IRD values in each core were compared to determine the succession of intervals of obviously positive, negative and nil correlation. This information was compared with a two-part model of IRD deposition derived from a consideration of the important principles of glaciology, iceberg dynamics,

oceanography, paleoclimatology, paleo-oceanography and glacial history which have a probable bearing on IRD production and distribution. The resultant model applied to core data is used to interpret paleo-oceanographic events. (Auth. mod.)

E-19260

Houtz, R.E., Hayes, D.E., Markl, R.G., **Kerguelen Plateau bathymetry, sediment distribution and crustal structure,** *Marine geology,* Oct. 1977 25(1/3), p.95-130, Refs. p.128-130.

Seismic profiles and piston cores from the central and southern parts of the Kerguelen plateau reveal a prominent sub-bottom reflector of Eocene age. It appears that significant areas of the plateau were peneplaned during the Eocene; this event was followed by general subsidence and normal faulting. Beneath the acoustic basement in the central plateau, sonobuoy measurements reveal a layer up to 1 km thick with a refraction velocity of 3.7 km/sec, underlain by material with an average velocity of 4.9 km/sec, presumably a crystalline basement. The 4.9 km/sec material must be considerably older than Cenomanian. No significant structural connection between Antarctica and the Kerguelen Plateau was observed. A sediment ridge paralleling the eastern margin of the plateau in abyssal depths appears to be the result of deposition by a westward-flowing bottom current that has been deflected northward by the plateau. Gravity data indicate a crust about 20-23 km thick beneath the plateau. The plateau is probably oceanic in origin. It is suggested that the composite Kerguelen Plateau is an uplifted remnant of the Cretaceous ocean basin that existed to the west of Australia following the separation of India from Western Australia—Antarctica. Furthermore, it is speculated that the time transgressive eastern margin of the plateau has been created by a modest northerly drift of the locus of volcanic activity relative to the Antarctic plate. (Auth. mod.)

E-19262

Moriarty, K.C., **Clay minerals in southeast Indian Ocean sediments, transport mechanisms and depositional environments,** *Marine geology,* Oct. 1977 25(1/3), p.149-174, 30 refs.

The clay mineralogy of the sediments of the southeast Indian Ocean and southwest Pacific Basin has been analyzed by using chemical analyses and X-ray diffraction on 245 samples. The Wilkes Land sector of Antarctica supplies two different assemblages of clays to the South Indian Basin. The assemblage from western Wilkes Land is characterized by iron-bearing mica, amphibole and montmorillonite, while the eastern part is characterized by alkali felspar, quartz, muscovite and interstratified smectite. Both areas are the source of plagioclase, and the mineralogy is believed to reflect the change from a granitic to mafic shield from east to west Wilkes Land. The smectites are probably reworked from Tertiary strata on the continental shelf and rise. Minor kaolin is associated with the montmorillonite. Chlorite is derived from Victoria Land metasediments and transported by the west-flowing bottom waters to the Adélie continental rise. Abundant iron-bearing illite from western Wilkes Land must have been deposited on the continental shelf before the formation of the icecap. Eolian processes are believed to be the main supplier of kaolin, smectite and quartz to the South Australian basin. South Australia is the source area for abundant interstratified smectite. New Zealand supplies a dominantly mechanically weathered assemblage of muscovite, chlorite, amphibole and plagioclase to the surrounding basins. This assemblage is probably glacial eroded rock flour from South Island. (Auth.)

E-19263

Ciesielski, P.F., Wise, S.W., Jr., **Geologic history of the Maurice Ewing Bank of the Falkland Plateau (southwest Atlantic sector of the Southern Ocean) based on piston and drill cores,** *Marine geology,* Oct. 1977 25(1/3), p.175-207, 32 refs.

Paleontologic and sedimentologic analyses of fifty-five piston cores and three drill-core sequences, combined with seismic reflection profiler data, provide the basis for a geologic study of the intermediate-depth Maurice Ewing Bank located at the eastern end of the Falkland (Malvinas) Plateau. A comparison of faunal and floral assemblage characteristics of Cretaceous sediment from opposite sides of the Maurice Ewing Bank shows significant paleoecological differences which suggest that the Falkland Plateau served as an important barrier between water masses in the South Atlantic during this time. During the Tertiary, a relatively high carbonate compensation depth coupled with a significant variation in topography across the bank contributed to marked changes in lithologic facies ranging from coccolith ooze near the apex of the bank to diatom ooze and zeolitic clay on its flanks. Miocene coccolith ooze deposition ceased when the center of high carbonate productivity (and the Miocene Polar Front?) migrated north of the bank in response to deteriorating climatic conditions associated with a severe Late Miocene continental glaciation on the Antarctic continent. Strong bottom currents associated with the Cretaceous boundary event, the Early Miocene opening of the Drake Passage, and the Late Miocene Antarctic glaciation caused scouring and removal of significant volumes of sediment, thus contributing to the complex erosional history of the bank. During the Late Miocene the last and most severe of these events truncated the previously deposited Upper Cretaceous—Miocene sequence of sediments of the bank. Erosion of older pelagic oozes ceased with the deposition of Plio-Pleistocene glacial marine clastics. Carbonate deposition in the study area resumed during the latest Pleistocene when the polar front migrated to a mean position near the southern margin of the bank. (Auth. mod.)

E-19264

Tucholke, B.E., **Sedimentation processes and acoustic stratigraphy in the Bellingshausen Basin,** *Marine geology,* Oct. 1977 25(1/3), p.209-230, 33 refs.

DSDP Leg 35 drilling results and seismic reflection profiles from the Bellingshausen Basin allow definition of the sedimentary processes which have shaped much of the deepwater West Antarctic continental margin. The continental rise exhibits three distinct types of acoustic signature characteristic of specific sedimentary processes. The upper rise has a smooth to irregular seafloor above highly reflective sediments with poor acoustic lamination or no coherent reflectors; the sediment probably has been emplaced chaotically by slumping from the adjacent continental slope and has been modified by local slumping and turbidity currents. The central continental rise exhibits moderately reflective but finely laminated sediments containing large sediment waves, smaller-scale migrating sediment dunes and leveed channels. The primary constructional processes are deposition from channel-bank overflow of turbidity currents and from the nepheloid layer maintained by the westward-flowing Antarctic Rise Countercurrent. The lower rise has very reflective sediments with moderate to strong acoustic lamination which represent proximal deposition from turbidity currents and local reworking by bottom currents. Development of the continental rise has caused seaward migration of these acoustic provinces with time. The Bellingshausen Abyssal Plain contains highly reflective sediments which generally have well-defined, closely spaced and horizontal acoustic laminae; reflector definition is best in distal parts of the plain. These sediments represent proximal to distal deposition of turbidites, the most seaward of which are ponded into the Eltanin and adjacent fracture zones. (Auth. mod.)

E-19265

Weissel, J.K., Hayes, D.E., Herron, E.M., **Plate tectonics synthesis: the displacements between Australia, New Zealand, and Antarctica since the Late Cretaceous,** *Marine geology,* Oct. 1977 25(1/3), p.231-277, 36 refs.

A comprehensive study of the last 75 m.y. of plate tectonics history has been undertaken for the Tasman Basin, the Indian-Pacific-

Antarctic triple junction, the Indian-Pacific plate boundary south of New Zealand, and the southeast Pacific Ocean. The results and conclusions of the study are given. From the magnetic lineations mapped in the southern oceans, new finite rotations were calculated which determine the relative positions of the Australian, New Zealand, and Antarctic continental fragments at 5-10 m.y. intervals during the last 75 m.y. For the New Zealand region, finite rotations calculated from magnetic lineations in the Tasman Sea and southwestern Pacific indicate that three plates were active during the Late Cretaceous to Paleocene. Previous workers have proposed that one of the three plate boundaries occurred southward between East and West Antarctica approximately along the trend of the Transantarctic mountains. As no direct geologic or geophysical evidence in Antarctica supports this proposal and since sea-floor spreading magnetic evidence shows that an active plate boundary passed through the New Zealand region after the Paleocene, the required plate boundary has been carried northward. The Indian—Pacific poles of relative motion were always close to this boundary during the Cenozoic and thus corresponding evidence for plate interactions in New Zealand continental geology is generally variable and sometimes subtle.

E-19271

Calkin, P.E., **Geomorphology and glacial geology of the Victoria Valley system, southern Victoria Land, Antarctica,** Columbus, Ohio State University, 1963, 293p., University Microfilms order No.64-6882, Ph.D. thesis. Refs. p.284-292.

The walls of the Victoria Valley system rise steeply to 2,000 m elevation but are broken by cirques, many of them ice-free. Small valley glaciers enter the area from ice fields in the east, north, and west. Glacial and solifluction deposits mantle the valley floors. The area is a cold desert. Drainage is largely internal; the meager stream flow is confined to the summer months. Constant, strong winds produce sand dunes, sand mantles, pebble ridges, and well-formed ventifacts. A description is given of occurrence, development and results of Victoria Glaciation, which began more than 30,000 yrs. B.P. and is subdivided into three episodes: the Bull, Vida and Packard Drift.

E-19277

Lopatin, B.G., Poliakov, M.M., **Geology of Marie Byrd Land and Eights Coast** [Geologiia Zemli Meri Berd i Berega Eĭtsa], Moscow, Nauka, 1976, 175p., In Russian. Refs. p.171-173.

DLC QE050.L66

Results of geological investigations carried out in the coastal mountains of West Antarctica between 90 and 160W are presented. Regional stratigraphy and magmatism charts are given. Detailed petrographic and petrochemical characteristics of various intrusive volcanic and metamorphic complexes are also drawn up. The conditions of Proterozoic and Lower Paleozoic metamorphism are determined by studying mineral paragenesis and paleothermometry. Particular attention is paid to Cainozoic alkaline basaltic volcanism. The structure of the region and its tectonic characteristics are described.

E-19278

Kaminuma, K., **Volcanic and seismic activity at Mount Erebus, Antarctica,** *Volcanological Society of Japan. Bulletin,* 1976 21(2), p.107-115, In Japanese with English summary. 14 refs.

For the purpose of observing small/micro earthquakes around McMurdo Sound and Mt. Erebus, seismological observations were carried out in the austral summer seasons of 1974-75 and 1975-76, as one of the research programs of the Dry Valley Drilling Project (DVDP) which was carried out by scientists from Japan, New Zealand and the United States. Background seismicity in and around the McMurdo Sound area is estimated to be one small/micro earthquake every two days. In addition to this background seismicity, one earthquake occurs in every two days in the volcanic area around Mt. Erebus. (Auth. mod.)

E-19281

Miyajima, M.H., **Subantarctic region, southeast Indian Ocean: absolute chronology of upper Pleistocene calcareous nannofossil zones and paleoclimatic history determined from silicoflagellate, coccolith, and carbonate analysis,** Tallahassee, Florida State University, June 1975, 199p., Master's thesis. Refs. p.173-199.

Calcium carbonate and micropaleontological analyses have been completed on 5 piston cores of Pleistocene age for the subantarctic southeast Indian Ocean. Paleoclimatic history determined from changes in the microfloral content and calcium carbonate distribution indicate a warm lower Pleistocene, a cool, stable middle Pleistocene, and a relatively warm but unstable upper Pleistocene. The upper three Pleistocene coccolith zones of Geitzenauer (1972) are recognized. The carbonate analysis allowed differentiation between calcareous oozes and marls. Carbonate oozes are interpreted to indicate a decrease in bottom water production and possible increase in surface productivity. Surface water mass migrations are determined by silicoflagellate percent *Dictyocha.* The most distinctive warming occurs at approx 400,000 yr B.P. Temperatures were similar to the present (8-10C). Prior to this warming (at 500,000 yr), climatic conditions are interpreted to be very severe. (Auth. mod.)

E-19282

Ciesielski, P.F., **Biostratigraphy and paleoecology of Neogene and Oligocene silicoflagellates recovered from piston and drill cores off East Antarctica,** Tallahassee, Florida State University, Dec. 1974, 211p., Master's thesis. 82 refs.

A detailed micropaleontological analysis of eight *Eltanin* piston cores and eleven Deep Sea Drilling Project drill cores collected from the Southern Ocean south of Australia has resulted in the establishment of a silicoflagellate biostratigraphy zonation of Recent to early Oligocene Southern Ocean sediments. The established zonation includes fifteen zones and two subzones; of these, ten zones and two subzones are described for the first time. New zones and subzones include: *Distephanus speculum* Zone A, *D. speculum* Zone B, *D. boliviensis* Zone, *Dictyocha aspera* var. *pygmaea-Dictyocha fibula* var. *punila* Zone, *Mesocena diodon* Zone, *Dictyocha mutabilis* zone, *Naviculopsis regularis* Zone, *N. robusta* Zone, *N. biapiculata* Zone, *Dictyocha deflandrei* Zone, *D. frenguellii* Subzone, *Mesocena apiculata* Subzone. A new silicoflagellate paleotemperature curve is presented which is based on *Dictyocha/Distephanus* ratios in fifty Recent surface sediments and their correlation with mean annual water temperatures of the overlying water masses. (Auth. mod.)

E-19283

Dalziel, M.C., **Geochemistry of antarctic sediments with emphasis on the distribution of barium,** Coral Gables, University of Miami, May 1975, 58p., Master's thesis. Refs. p.54-58.

Sediments south of Australia show enrichment in Mn, Fe, and V coupled with a depletion in Al, SiO2, and Ti along ridge areas. This pattern is probably the result of hydrothermal volcanic activity along the South East Indian Rise. La, Sc, and Zr, on the other hand, do not show any relationship to the geochemical processes of the rise. P2O5 was previously thought to have a polygenetic origin, but in this study it showed a strong covariance with V along the ridge. In past studies of marine sediments, Ba was often found to be correlated with biogenic opaline silica, strongly indicating a biologic source for the Ba. However, in Antarctic Ocean sediments, Ba showed a significant negative covariation with opaline silica and a positive covariance with elements characteristic of ridge sediments. This suggests that Ba may also have a volcanic origin. (Auth.)

E-19286

Nikiforov, L.G., Toropov, G.A., **Climatic zonality of types of seacoasts** [Klimaticheskaia zonal'nost' tipov beregov Mirovogo okeana], *Moscow. Universitet. Vestnik. Seriia 5 Geografiia*, May-June 1977 No.3, p.43-50, In Russian with English summary. 24 refs.

Quantitative data on the distribution of different types of seashores in different climatic zones are given. The conclusion is drawn that coasts unmodified or slightly modified by the sea occur mostly in high latitudes, while coasts of accumulation occur mainly in low latitudes. An important conclusion is the fact of azonality of the abrasion process on sea shores. (Auth.)

E-19287

La Prade, K.E., **Geology of Shackleton Glacier area, Queen Maud Range, Transantarctic Mountains, Antarctica,** Lubbock, Texas Technological College, 1969, 394p. + charts, University Microfilms order No. 70-1477, Ph.D. thesis. Refs. p.258-278.

Field work in the Queen Maud Range of the Transantarctic Mts. was conducted by parties from Texas Technological College during the austral summers of 1962-63, 1964-65, and 1968-69. The purpose of this study was to examine exposed rocks along the walls of Shackleton Glacier and in nearby hills, to investigate the geomorphology of the area, to measure sedimentary units, to collect samples of rocks and fossils for laboratory study, to make an aerial geologic map to fill the gaps; to make a petrologic study of the sediments, to investigate structural features, and to interpret the geologic history of this part of the Transantarctic Mts.

E-19292

Watanuki, K., **Geochemical features of antarctic lakes,** *Antarctic record*, Aug. 1977 No.59, p.18-25, 6 refs., In Japanese with English summary.

Geochemical investigations of antarctic lakes have been carried out on major components, nutrient matters, stable isotopes and organic substances in waters in order to clarify the geochemical features of the lakes. The present waters of inland lakes are supplied from the melt water of glacier or snow. The waters of saline lakes on the coast of the continent have originated mainly from sea water, for example Lake Nurume, Lake Hunazoko (Syowa Oasis) and Lake Fryxell (McMurdo Oasis). The isotopic compositions of waters in some lakes such as Lake Vanda are similar to that of the snow or melt water of the glacier, while the isotopic composition of sulfur in the salt deposited or dissolved in the lake is similar to that of the sea origin sulfur compound. The water of highly saline lakes should have been produced in the process of concentration of the sea water under a frigid condition. For some of the lakes, it is considered that the water was evaporated once or several times and the residue extracted with melt water of glaciers. From the contents of organic substances, nutrient matters and gases in the lake, activity of microorganisms is suggested in some of the lakes. In view of the abundance and relative ratios of some heavy metal elements, such as copper, zinc, lead and cadmium, these elements should have been supplied from snow. (Auth.)

E-19294

Mishima, M., Yamagata, N., **Distribution of trace elements around Showa Station. 2. Trace metals distribution in Langhovde,** *Antarctic record*, Aug. 1977 No.59, p.30-36, In Japanese with English summary.

Trace metal (Cu, Fe, Mg, Mn and Zn) concentration distribution in water and sediment was determined by atomic absorption methods with flame and flameless systems using wet dissolution method. The samples were collected from Langhovde. The results showed an approximate log-normal distribution of concentration of metals in sediment of the Yukidori Valley. (Auth.)

E-19295

Karasawa, S., Yazawa, A., Endo, Y., **Chemical analysis of soil in East Ongul Island, Antarctica,** *Antarctic record*, Aug. 1977 No.59, p.37-45, 8 refs., In Japanese with English summary.

Soil samples were taken at 16 points in East Ongul Island, Antarctica from January 7 to February 4, 1974. Their chemical analysis showed the following results: dissolved cations 0.10-4.63 me/100 g soil; cation exchangeable capacity 1.15-5.87 me/100 soil; exchanged cations Mg 2.81-4.26 me/100 g soil, Ca 0.18-2.16 me/100 g soil, Na 0.01-11.3 me/100 g soil, K 0.01-0.96 me/100 g soil. From the obtained results three areas were distinguished, namely, the area containing many dissolved cations, the area where the degree of base saturation is high, and the area in which the degree of base saturation is adequate for plant growth. (Auth.)

E-19296

Karasawa, S., Fukushima, H., **Diatom flora and environmental factors in some freshwater ponds of East Ongul Island,** *Antarctic record*, Aug. 1977 No.59, p.46-53, 13 refs., In Japanese with English summary.

Diatom flora and chemical factors of water in sixteen ponds of East Ongul Island, which are 10-100 meters in diameter and less than 2 meters in depth, were investigated from January 7 to 21, 1974. The obtained results are as follows: pH value—6.7-7.2, chlor ion concentration—49.0-860 ppm, chemical oxygen demand—2.34-8.71 ppm and biological oxygen demand—0.4-4.2 ppm. Twenty-three taxa of diatoms were identified including newly found three taxa, *Navicula obiculata*, *Navicula seminulum* v. *hustedtii* and *Gomphonema olivaceum* v. *tenellum*. The *Navicula muticopsis*, the *Stauroneis anceps* and the *Pinnularia braunii* associations were distinguished. It was of interest to note that the *Nav. muticopsis* association was distributed in the eastern and the southern coastal area of the Island, which seemed to be influenced by marine salts. (Auth.)

E-19311

Shiraishi, K., **Geology and petrography of the northern Yamato Mountains, East Antarctica,** *Tokyo. National Institute of Polar Research. Memoirs. Series C: Earth sciences*, Oct. 1977 No.12, 33p., 33 refs.

In the northern Yamato Mountains, there are two groups of rocks. One is the syenite gneiss group which was metamorphosed under the granulite facies conditions. The other is the granite gneiss group which was metamorphosed under the amphibolite facies conditions. Besides, metabasites and acid dykes are found to accompany them. There is gradational transition between the two groups of the rocks, and it is revealed from the field and microscopic observations that the transition is not progressive metamorphism but the early-formed syenite gneiss was activated under the amphibolite facies conditions resulting in the granite gneiss. According to the bulk chemical analysis the trend of the granitization in the diagram, norm q-or-ab-ne, is characterized by the decrease of "or" and the increase of "q". Finally the point of eutectic minimum is reached. Therefore, it seems evident that the granitization occurred in association with anatexis. (Auth.)

E-19315

Immel, R., Osmond, J.K., **Micromanganese nodules in deep-sea sediments: uranium-isotopic evidence for post-depositional origin,** *Chemical geology*, Dec. 1976 18(4), p.263-272, 32 refs.

Micromanganese nodules from three deep-sea cores are found to contain less U than average nodules dredged from the sea floor. Two

of the cores were collected during cruises of the *Eltanin* from the South Tasman Basin, and the third from the Southwest Pacific Basin. The U-234/U-236 ratio in the micronodules is higher than any previously reported in deep-sea sediments. These data are interpreted to mean that at least some micronodules form well after deposition of the enclosing sediments, in particular where conditions are less oxidizing than average. (Auth.)

E-19316

De Wit, M.J., **Evolution of the Scotia Arc as a key to the reconstruction of southwestern Gondwanaland,** *Tectonophysics,* Jan. 5, 1977 37(1-3), p.53-81.

A new model for the evolution of the Scotia Arc is presented. During the Late Jurassic-Early Cretaceous, contemporaneous with the initial separation of eastern and western Gondwanaland, a volcanic arc founded on continental crust broke away from the "southwestern" margin of the supercontinent, allowing the intrusion of mafic magma directly behind the active arc (back-arc spreading). This led to the development of the mafic crust of an ensialic marginal basin. This basin extended from southern South America through the central part of the Scotia and probably southward into the Weddell Sea. The model, together with new geologic data, leads to a new reconstruction of southwestern Gondwanaland in which the Paleozoic/Early Mesozoic rocks of southern South America and the Antarctic Peninsula represent the arc—trench tectonic environment of the "Samfrau geosyncline".

E-19317

Brookfield, M.E., **Emplacement of giant ophiolite nappes. I. Mesozoic-Cenozoic examples,** *Tectonophysics,* Feb. 2, 1977 37(4), p.247-303, Refs. p.297-303.

The occurrence of ophiolite nappes has been considered evidence for the siting of ancient subduction zones. A study of the detailed stratigraphy and plate motions associated with Upper Mesozoic to Pliocene ophiolite nappes of the Pacific, Indian and Mediterranean shows that transcurrent faulting during changes in relative plate motions is the major cause of initial ophiolite nappe emplacement. Giant ophiolite nappes are not related to subduction zones or island arcs. The features of dominantly transcurrent faulting and thin oceanic sediments without island-arc development are exemplified in the Macquarie ridge. (Auth. mod.)

E-19322

De Wit, M.J., Dutch, S., Kligfield, R., Allen, R., Stern, C., **Deformation, serpentinization and emplacement of a dunite complex, Gibbs Island, South Shetland Islands: possible fracture zone tectonics,** *Journal of geology,* Nov. 1977 86(6), p.745-762, Refs. p.761-762.

Gibbs Island, Antarctica, consists of an Alpine-type ultramafic complex composed of dunite and serpentinized dunite, which structurally overlies a presumed upper Paleozoic-lower Mesozoic metasedimentary-metavolcanic sequence. The dunite complex has undergone two distinct periods of deformation and serpentinization under contrasting metamorphic conditions. The first period was episodic and occurred prior to final emplacement of the complex into its tectonic position. It resulted in the formation of a distinct serpentinite (dominantly antigorite) layering throughout the complex. The later period of deformation resulted in the formation of a thick basal serpentinite (dominantly chrysotile) schist zone, along which the complex was emplaced. This emplacement accompanied the main deformation of the underlying rocks. A third, post-emplacement, period of deformation coincided with the metamorphic "peak" in the metasediments-metavolcanics. Structural and petrographic evidence suggests that the dunite complex represents mantle intrusion into a transform fault or fracture zone which subsequently underwent ocean floor deformation and in situ metamorphism. Emplacement of the dunite complex into the supracrustal rocks occurred during a metamorphic "low" and may have taken place within the fracture zone or in the upper Paleozoic-early Mesozoic trench that was present along the Pacific margin of Gondwanaland. (Auth.)

E-19325

Cassidy, W.A., Olsen, E., Yanai, K., **Antarctica: a deep-freeze storehouse for meteorites,** *Science,* Nov. 18, 1977 198(4318), p.727-731, 10 refs.

Meteorites that fall on the Antarctic ice cap are preserved for long periods of time under very clean conditions as they are carried toward the continental margin. If the host ice encounters a barrier it cannot flow over or around, it tends to dissipate by ablation, leaving an accumulation of meteorites on the surface. The meteorites recovered at Mount Baldr and Allan Hills range in size from an individual weighing 305 g to a group of fragments totaling 408 kg; the latter is the largest meteorite on record from Antarctica. The significance of these discoveries 3200 km across the continent from the Yamato Mountains site is that concentrations of meteorites on blue ice surfaces can now be considered a general phenomenon in Antarctica.

E-19329

Irving, E., **Drift of the major continental blocks since the Devonian,** *Nature,* Nov. 24, 1977 270(5635), p.304-309, 55 refs.

Maps summarizing the drift of the major continental blocks since the middle Devonian (-375 Myr ago) are presented. They are based mainly on a global synthesis of the paleomagnetic data, including the most recent results from the USSR. Reasonably reliable apparent polar wandering paths for the major continental blocks can now be drawn for the Middle Carboniferous (325 Myr ago) onwards, and are given. Calculations using 30 and 40 Myr intervals yielded almost identical mean values, but at 20 Myr more scatter was evident. The mean 95% errors are 6 deg (North America), 7 deg (Eurasia) and 7 deg (Gondwana). The palaeomagnetic evidence indicates that the continents have been in a more or less continuous relative motion. At the end of the Palaeozoic there was a redistribution of the major continental blocks that occurred without the formation of new ocean between them. Wegener's Pangaea seems only to have lasted a few tens of millions of years.

E-19331

Omoto, K., **Subglacial geomorphology of Mizuho Plateau and around Yamato Mountains, East Antarctica,** *Tohoku University. Science reports. Seventh series (Geography),* June 1976 26(1), p.47-99, Refs. p.75-77.

During the summer 1969-70 the JARE carried out a number of observations to clarify glacial and subglacial topography along an inland traverse route across the Mizuho Plateau between 43E and the Yamato Mountains. Shape and depth of the ice sheet were analyzed by surface topography determined by barometric altimetry and leveling, thickness of the sheet by radio echo sounding and gravimetry, and elevation of the bedrock surface was estimated. Subglacial topography was studied for three areas—the coastal region, the inland area, and the Yamato Mountain region.

E-19350

Antarctic resources—effects of mineral exploration, *Polar record,* Sep. 1977 18(117), SCAR bulletin No.57, Sep. 1977, p.631-636.

A preliminary assessment by SCAR of the possible effect on the antarctic environment if mineral exploration or exploitation should occur there is given, and research requirements for formulating assessments are outlined. The most likely mineral resource to attract commercial interest in the foreseeable future is offshore oil. In addition to catastrophic oil spills, a number of other consequences of offshore exploitation, such as the low-level chronic presence of toxic substances in the sea, emissions to the atmosphere and disturbances as-

sociated with sea-bed installations, may affect different parts of the indigenous biota on different scales and intensities. On land the main impact is likely to come through disturbances of the terrain and freshwater lakes through accidents which would be particularly likely to pose a threat to the sea bird colonies and offshore benthic communities. Such effects would however be localized. It is possible to guard against some of these threats through good engineering design and emergency procedures, but some accidental contamination would be inevitable. Given an adequate system of environmental reporting, regulation and monitoring of commercial activities, the risk of accidents should be kept to a minimum.

E-19353

Cassidy, D.S., Kaharoeddin, F.A., Zemmels, I., Knapp, M.B., **USNS *Eltanin:* an inventory of core location data with core location maps and cruise 55 core descriptions,** *Florida. State University, Tallahassee. Sedimentology Research Laboratory. Contribution,* Apr. 1977 No.44, 90p., 6 refs.

This report has been organized into three parts: 1) location maps, by cruise, of all cores recovered aboard *Eltanin* that are housed at the FSU Facility; 2) a lengthy table of location data for these cores listing cruise and core number, type of core, latitude and longitude of core, core length, and accompanying trigger core recovery associated with the corresponding piston core, and 3) core descriptions for *Eltanin* cruise 55. In order to make use of this information for the purpose for which it is intended, the reader is urged to give particular attention to the discussion included for each of the three parts. (Auth.)

E-19354

Cassidy, D.S., Ciesielski, P.F., Kaharoeddin, F.A., Wise, S.W., Jr., Zemmels, I., **ARA *Islas Orcadas* cruise 0775 sediment descriptions,** *Florida. State University. Tallahassee. Sedimentology Research Laboratory. Contribution,* June 1977 No.45, 76p., 23 refs.

The data presented are concerned with the results of coring activities aboard cruise 0775 of *Islas Orcadas* (formerly *Eltanin),* the first marine geology coring cruise of this vessel under the terms of the present United States-Argentine agreement, and have been organized into five essential elements: 1) a brief summary of the coring objectives of the cruise, together with a discussion of core recovery; 2) a table and map of station location data for materials retrieved; 3) an explanation of the laboratory procedures and descriptive criteria used in the description of the sediments; 4) lithologic descriptions of the piston cores, and 5) lithologic descriptions of the trigger cores. A significant feature of this volume is the method of graphic representation of the piston cores descriptions. Termed a "modified DSDP (Deep Sea Drilling Project)" format, the method is an approach to providing investigators with a thorough, more detailed knowledge of the floral, faunal, and mineralogical elements comprising the sediments. Also, for the first time, a table of tentative age dates for each core has been included with the core descriptions. (Auth. mod.)

E-19372

Simonov, I.M., **Physical-geographic description of the Fildes Peninsula (South Shetland Islands),** *Polar geography,* July-Sep. 1977 1(3), p.223-242, For Russian original see 30-1820 or E-15876. 23 refs.

The Fildes Peninsula of King George (Waterloo) Island, in the South Shetland group, represents an example of a periglacial landscape in the Subantarctic belt. Such a landscape differs significantly from that of Antarctic oases. The Fildes Peninsula is distinguished by a cool, moist climate and a well developed plant and animal life while the oases of Antarctica are cold deserts, with dry continental air, strong winds and a sparse flora and fauna. The physical geography of the Fildes Peninsula is described in detail, based in part on work of the Soviet Union's Bellingshausen station, established on the peninsula in 1968.

E-19374

Mercer, J.H., Palacios M., O., **Radiocarbon dating of the last glaciation in Peru,** *Geology,* Oct. 1977 5(10), p.600-604, 26 refs.

In the Cordillera Vilcanota and the vicinity of the Quelccaya ice cap, near lat 14S in eastern Peru, the last glaciation culminated sometime between about 28,000 and 14,000 B.P. Alpine glaciers were then only about half as long as during an earlier glaciation of unknown date. A rather minor readvance of the Quelccaya ice cap was in progress about 11,500 B.P. and culminated about 11,000 B.P., some 500 to 800 yr before the Younger Dryas Stade in Europe. By 10,000 B.P., the Quelccaya ice cap was little if any larger than it is today, and it was smaller than it is today between about 2700 and 1600 B.P. Glacier fluctuations during the interval 10,000 to 3000 B.P. have not yet been determined. A "Little Ice Age" maximum culminated between 600 and 300 B.P. The relative importance of changes in temperature and precipitation in causing these glacier variations is uncertain. (Auth.)

E-19375

Horn, D.R., Horn, B.M., Delach, M.N., **Distribution of ferromanganese deposits in the World Ocean,** Conference on ferromanganese deposits on the ocean floor, Arden House and Lamont-Doherty Geological Observatory, New York, Jan. 20-22, 1972, Papers, Washington, D.C., National Science Foundation, 1972, p.9-17, 12 refs.

DLC TN490.M3C66

A survey of reported occurrences of ferromanganese deposits on the ocean floor reveals major provinces of nodular and encrusting deposits. In the Atlantic and western Indian Oceans they include the Blake Plateau and Red Clay Province off Florida; South American Province in the South Atlantic; Cape Basin and Agulhas Plateau off the tip of South Africa; and Madagascar and Crozet Basins of the Indian Ocean. The most widespread ferromanganese deposits lie in the North Pacific where they are associated with red clay and radiolarian sediment. Less data are available from the South Pacific, but suggest the Manihiki and Tuamotu Plateaus; and the Line, Cook and Society Islands are rich in ferromanganese. (Auth.)

E-19376

Cronan, D.S., **Regional geochemistry of ferromanganese nodules in the world ocean,** Conference on ferromanganese deposits on the ocean floor, Arden House and Lamont-Doherty Geological Observatory, New York, Jan. 20-22, 1972, Papers, Washington, D.C., National Science Foundation, 1972, p.19-30, 32 refs.

DLC TN490.M3C66

Regional variations in the composition of manganese nodules occur in the Pacific, Indian and Atlantic Oceans, including antarctic waters. In both the Pacific and Indian Oceans the variations are similar. Manganese, nickel and copper attain maximum concentrations in deposits from the east of each ocean and decrease in concentration toward the west, while the converse is found for Fe, Co, Ti, and Pb. Exceptions include the Mexican continental borderland where deposits are rich in manganese, but low in nickel and copper; and elevated submarine volcanic areas which, irrespective of their location, seem to contain deposits similar in composition. Regional variations in nodule composition in the Atlantic seem less distinct. Both manganese and iron are most abundant in separate areas of the South Atlantic, and vary fairly irregularly in the North Atlantic. Nickel, cobalt, copper, and zinc follow manganese. On a worldwide basis, regional variations in nodule composition can probably be related to the proximity of the deposits to potential sources of metals and to the nature of their environment of deposition. One of the most important aspects of the latter is the redox potential. This influences 1) the

degree of diagenetic mobility of manganese and hence the Mn/Fe ratio of the deposits; and 2) their mineralogy and thus their minor element content. Redox potentials probably vary with depth, distance from land, and sedimentation rates; and thus each of these factors is likely to influence the regional geochemistry of submarine manganese deposits. (Auth.)

E-19377

Payne, R.R., Conolly, J.R., **Pleistocene manganese pavement production: its relationship to the origin of manganese in the Tasman Sea,** Conference on ferromanganese deposits on the ocean floor, Arden House and Lamont-Doherty Geological Observatory, New York, Jan. 20-22, 1972, Papers, Washington, D.C., National Science Foundation, 1972, p.81-92, 12 refs.

DLC TN490.M3C66

Bottom photographs and piston cores taken by the USNS *Eltanin* in the southern Tasman Basin between Australia and New Zealand reveal an extensive area of manganese deposition. This area, bounded topographically by the Macquarie Ridge to the east, the Southeast Indian Ridge (Indian-Antarctic Ridge) to the southwest and the Tasman Rise to the north, has been influenced by strong bottom currents of the Antarctic Circumpolar Current since at least the Gauss Epoch. The occurrence of firm siliceous ooze of Gauss to Gilbert age below the manganese in cores taken along the boundaries of the basin suggests currents have become active since that time (3.5 to 2.43 m.y.B.P.) In a few cores, Brunhes-age sediment is found over the top of the pavement. (Auth.)

E-19397

Hofmann, J., **Geology and geological research in Antarctica—1. East Antarctica** [Geologie und geologische Erforschung des antarktischen Kontinents—1. Ostantarktis], *Zeitschrift für angewandte Geologie.* Aug. 1975 21(8), p.392-402, In German with English and Russian summaries. Refs. p.401-402.

The author reviews the development and present-day status of knowledge of the geological structure of the antarctic continent. After discussing large-scale regional divisions, subglacial morphology and geotectonic characteristics, he describes the different formations in some detail.

E-19398

Minshew, V.H., Jr., **Geology of the Scott Glacier and Wisconsin Range areas, central Transantarctic Mountains, Antarctica,** Columbus, Ohio State University, 1967, 268p., University Microfilms order No.68-3032, Ph.D. thesis. Refs. p.262-268.

This report covers two seasons field work in the central Transantarctic Mountains and subsequent laboratory investigations at the Ohio State University of specimens collected during the expeditions. A study of the stratigraphy and petrology of the Late Paleozoic Beacon rocks was conducted; cursory observations were made on the basement complex and on Cenozoic rocks in the area of the Scott Glacier during the first expedition. Observations on the second expedition, with field headquarters in the Wisconsin Range, were restricted to the Beacon Rocks and metamorphic rocks of the basement.

E-19400

Wade, F.A., Cathey, C.A., Oldham, J.B., **Reconnaissance geologic map of the Boyd Glacier quadrangle, Marie Byrd Land, Antarctica,** U.S. Geological Survey. Antarctic Research Program Map. Map A-6, Washington, 1977, 1 sheet, 12 refs.

This is a 1:250,000 map of the Boyd and Hammond Glaciers in the Ford Ranges, Marie Byrd Land. Lower Paleozoic and Precambrian (Swanson Formations) are found in the Haines Mts., the Mackay Mts. and elsewhere, while the Sarnoff Mts. and the Allegheny Mts. are dominated by Cretaceous Byrd Coast Granite. Quaternary and Tertiary outcrops are rare and found mainly in the Sarnoff area moraines.

E-19401

Wade, F.A., Cathey, C.A., Oldham, J.B., **Reconnaissance geological map of the Guest Peninsula quadrangle, Marie Byrd Land, Antarctica,** U.S. Geological Survey Antarctic Research Program Map. Map A-7, Washington, 1977, 1 sheet, 12 refs.

This is a 1:250,000 map of the Guest Peninsula, Marie Byrd Land, Antarctica. Exposed rocks in the Fosdick Mts. and western Denfeld Mts. are primarily Lower Paleozoic and Precambrian, in the eastern Denfelds, Saunders, Chester, and western Phillips Mts., Mississippian and Devonian, and in the central and eastern Phillips Cretaceous.

E-19415

O'Nions, R.K., Parkhurst, R.J., **Petrogenetic significance of isotope and trace element variations in volcanic rocks from the Mid-Atlantic,** *Journal of petrology,* Oct. 1974 15(3), p.603-634, Refs. p.631-634.

High precision Sr-87/Sr-86 analyses, together with determinations of Rb, Sr, K2O, Na2O and, in a few cases, other elements, are reported for about fifty volcanic rocks (mainly basaltic) from the Atlantic Ocean basin. Results for dredged basalts from the Reykjanes Ridge and Charles Gibbs Fracture Zone, and an enstatite-forsterite basalt from Kolbeinsey islet, support the general observation that ocean-ridge tholeiites have uniformly low Sr-87/Sr-86 ratios (0.-70294) and lithophile element contents compared with the most primitive basalts on ocean islands, including the Neovolcanic zones of Iceland, although progressive decrease in these quantities away from Iceland has not been confirmed. In contrast, the ocean island alkali basalts generally have higher Sr-87/Sr-86 ratios (0.70334 for the Snaefellsnes peninsula of Iceland, 0.70343 for Jan Mayen, 0.70509 for Tristan da Cunha and 0.70369 for Bouvetoya). The chief exception is Ascension Island, where volcanic rocks ranging from alkali-olivine basalt to trachyte give a mean value of 0.70284. The constancy of this ratio throughout eruptive sequences on any single island indicates that Sr-isotope characteristics are primary features. These variations, which are far outside analytical errors, are considered in the light of the geochemistry and isotope systematics of ocean basalts in general.

E-19418

Malmgren, B.A., Kennett, J.P., **Biometric differentiation between Recent *Globigerina bulloides* and *Globigerina falconensis* in the southern Indian Ocean,** *Journal of foraminiferal research,* Apr. 1977 7(2), p.130-148, 23 refs.

Morphometric analysis has been carried out on the morphologically similar Recent planktonic foraminiferal species *Globigerina bulloides* d'Orbigny and *Globigerina falconensis* Blow in southern Indian Ocean surface sediments from subtropical to northern subantarctic waters. Previous non-biometric studies have suggested that these two forms grade into each other at such latitudes and that they may represent subspecies or phenotypic variants of a single species. Initial separation of the two forms is most readily based on the presence or absence of a distinct apertural lip in *G. falconensis* and *G. bulloides* respectively. A small percentage of specimens which have intermediate apertural characteristics and which do not allow clear taxonomic differentiation are allocated to either species by multivariate morphometric analysis. The studies have shown that the two forms exhibit distinct differences in patterns of variation in relative abundance, kummerform relative abundance, coiling direction and test size and shape. Essential morphologic differences are related to thick-

ness (depth) of test and final chamber, and apertural dimensions with *G. falconensis* being more compressed and having smaller apertures than *G. bulloides*. Kummerform chambers in *G. falconensis* are more elongated than in *G. bulloides*, and this difference is amplified with cooler temperatures.

E-19419

Conger, S.D., Green, H.W., II, Lipps, J.H., **Test ultrastructure of some calcareous foraminifera,** *Journal of foraminiferal research,* Oct. 1977 7(4), p.278-296, 28 refs.

The wall structures of several species of calcareous foraminifera were examined using polarizing optical microscopy, scanning electron microscopy, and high voltage transmission electron microscopy. The species included the radial-walled *Globorotalia menardii, G. tumida, Glabratella ornatissima,* and *Ammonia beccarii,* and the granular-walled *Cassidulina crassa,* collected at Deception I. The wall structures of these species were also compared with the spicular *Carterina spiculotesta* and the porcelaneous *Alveolinella quoyi.* Ultra-thin sections prepared by ion-bombardment were used for transmission electron microscopy. The study has shown a number of similarities in the crystalline defect and inclusion substructure between the different species of the Rotaliina. Observations do not provide support for the hypothesis that organic material in the test controls the wall type which develops, except perhaps for *A. quoyi.* The organic membranes present in foraminiferal tests do not appear to be a controlling factor in crystal formation.

E-19420

Sviatlovskiĭ, A.E., **Regional volcanology** [Regional'naia vulkanologiia], Moscow, Nedra, 1975, 244p. (Pertinent p.136-139), In Russian. 178 refs.

DLC QE522.S93

The book concerns itself with volcanic processes in relation to the geological history of individual tectonic regions. The dynamic correlation between local tectonic structural development and volcanism is studied against the background of the latest conclusions of tectonics. One section of the book deals with Antarctic volcanology. The more than 5,000 km long Antarctic volcanic belt is a unique zone of an active crust overlying a crystalline basement of Baikalian age, and forming blocks separated by mobile zones. General characteristics of the different zones are summarized.

E-19423

Keany, J., **Pliocene-early Pleistocene paleoclimatic history recorded in antarctic-subantarctic deep-sea cores,** Tallahassee, Florida State University, 1972, 87p., Master's thesis. Refs. p.82-85.

Fluctuations of a cold left-coiling *Globigerina pachyderma* fauna with a warmer Subantarctic fauna define ten distinct intervals of warming during the Matuyama Reversed Epoch. This compares with six for the Brunhes Normal Epoch. Climatic fluctuations are of lower magnitude than in the Brunhes, although cooling was at times as intense as during the Brunhes. This conflicts with previous paleotemperature determinations based on radiolarian assemblages which suggest average warmer conditions throughout the entire Matuyama Epoch. The disappearance of the present day subtropical radiolarians, *Saturnulus planetes* and *Pterocanium trilobum,* near the Brunhes-Matuyama boundary has previously been regarded as strong evidence for a deterioration of climatic conditions in the Brunhes. Throughout the Matuyama, however, these forms occur in association with cold (northern Antarctic-Subantarctic) planktonic foraminiferal assemblages, and thus apparently lost their environmental tolerance for northern Antarctic-Subantarctic waters about 0.7 m.y. BP. The opposite is true for the planktonic foraminifera *Globorotalia inflata* which adapted to Subantarctic waters approximately 0.7 m.y. BP.

E-19425

Ohta, Y., **Geological research in the Ellsworth Mountains: Norwegian Expedition 1974-75** [Erusuwasu Sanmyaku no chishitsu chosa; Noruwe 1974-75-Nen Tai], *Polar news (Kyokuchi),* Jan. 1976 No.22, p.2-9, In Japanese.

The author accompanied the 1974-75 Norwegian Antarctic Expedition to Queen Maud Land to investigate the geological profile of the Ellsworth Mountains. The structure of the southern part of these mountains suggests that the historical background of formation derives from the southeastern portion of the area, where folding occurred at the end of the Paleozoic, whereas to the southwest folding had ended about 400 Myr ago and only faulting continued thereafter.

E-19434

Kurasawa, H., Ono, M., **Dry Valley Drilling Project—an international effort** [Nankyoku Dorai Bare Kussaku Keikaku; kokusai kyodo kenkyu], *Geology news (Chishitsu nyusu),* Jan. 1975 No.245, p.44-59, In Japanese. 14 refs.

A brief history and description of DVDP is followed by a review of the results of the 1973-74 season, holes 1-9, drilled to depths of from 3.5 to 331 m. The United States supplies the drilling engineers, and Japan equipment for preparing samples, analyzing and measuring instruments, and other necessities for working up the findings.

E-19454

Barker, P., **What future for antarctic geology,** *Nature,* Oct. 13, 1977 269(5629), p.561-562.

The third Symposium on Antarctic Geology and Geophysics was held at Madison, Wis., on Aug. 22-17, 1977. The importance of the symposium lay in the opportunity it provided to assess the quality and global relevance of contemporary antarctic earth science and consider its future. Continental geology, the traditional core topic, occupied less of the program than at past meetings. Perhaps the liveliest part of the symposium was a two-day section on the geodynamics of the Scotia Arc. Mineral resources, presently occupying the attention of Antarctic Treaty signatories, were considered in only six out of about 150 papers. Southern Ocean marine geology was discussed in papers based mainly on deep sea drilling data and the *Eltanin* piston core collection. Future prospects in these various fields are briefly considered.

E-19462

Lindsay, J.F., **Stratigraphy and sedimentation of the lower Beacon rocks of the Queen Alexandra, Queen Elizabeth, and Holland Ranges, Antarctica, with emphasis on Paleozoic glaciation,** Columbus, Ohio State University, 1968, 300p., University Microfilms order No.69-11,663, Ph.D. thesis. Refs. p.292-300.

The sedimentary rocks of the lower Beacon succession in the Queen Alexandra, Queen Elizabeth and Holland Ranges in Antarctica consist of the Alexandra, Pagoda and Mackellar Formations, which are described in detail. The considerable extent and apparent continuity of the Paleozoic glacial sediments in Antarctica, along with the consistency in the orientation of interpreted ice directions, indicates that the sediments were deposited by an ice sheet of continental dimensions centered on southern Victoria Land. The regimen of the Paleozoic ice sheet was very similar to that of the Pleistocene of North America. The glacial sediments were deposited from active temperate ice, although evidence from a few beds suggests that the ice may locally have been stagnant. The distribution, thickness and lithology of the postglacial shales appears to be related closely to the final retreat of the ice sheet.

E-19463

Mudrey, M.G., Jr., Parker, B., Cartwright, K., McGinnis, L., **Diamond drilling in environmentally sensitive areas—environmental impact: monitoring and assessment,** Unpublished, 1976, 8p., Abstract published in Proceedings and Abstracts of the 22nd Institute of Lake Superior Geology.

Arguing that diamond drilling can be performed with minimal environmental impact if the site and work are constantly monitored interactively by an environmental engineer during and after the project, the authors cite as an example of a successful operation drilling done at Don Juan Pond in the Antarctic. Precautions taken at this site are described and suggestions made for a design model to be used to predict potential environmental impact for similar operations.

E-19465

Beu, A.G., Grant-Taylor, T.L., Hornibook, N. de B., **Nukumaruan records of the subantarctic scallop *Chlamys delicatula* and crab *Jacquinotia edwardsii* in central Hawke's Bay,** *New Zealand journal of geology and geophysics,* 1977 20(2), p.217-237, Refs. p.235-237.

Two new localities for early Nukumaruan (Hautawan) *Chlamys delicatula,* at Mt Miroroa, near the Napier-Taihape Road, and at Mangleton Road between the Wakarara and Ruahine Ranges, are much further north than previous localities. The large subantarctic crab *Jacquinotia edwardsii* occurs with *C. delicatula* as far north as Mangleton Road, and known fossil localities for *Jacquinotia* are listed by Yaldwyn and Beu. Early Nukumaruan sea-bottom temperatures in central Hawke's Bay were at least as low as they are today around southern Stewart Island. However, sea-surface and land temperatures were not more than 4C colder than at present. The migration of *Jacquinotia* and *Chlamys delicatula* in the mobile larval stage was probably brought about by a bottom current flowing northwards up a trough beneath warmer surface water, aided by tidal currents to and from Wanganui Basin. For the first time, *Globorotalia truncatulinoides* is recorded in sequence below *Chlamys delicatula,* at Mangleton Road. (Auth. mod.)

E-19466

Yaldwyn, J.C., Beu, A.G., **Fossil occurrence of *Jacquinotia edwardsii,*** *New Zealand journal of geology and geophysics,* 1977 20(2), p.237-243.

Large specimens of the large southern New Zealand spidercrab *Jacquinotia edwardsii* occur commonly in shallow water, up to the intertidal zone, around Campbell Island and the Auckland Islands, and have been investigated as a fishery resource. On rare occasions large specimens have been recorded swarming on the beaches at Stewart Island and on rare occasions they have been trawled on the continental shelf off Otago and Banks Peninsula, but specimens are usually uncommon as far north as Otago and large individuals are rare in the northern part of the range. The localities and ages of the fossil specimens examined are discussed.

E-19467

Adams, C.J.D., Robinson, P., **Potassium-argon ages of schists from Chatham Island, New Zealand Plateau, southwest Pacific,** *New Zealand journal of geology and geophysics,* 1977 20(2), p.287-301, 28 refs.

The pre-Cretaceous basement rocks of Chatham Island are described. K-Ar ages for 11 total rock samples and ages for 10 mica samples of the Chatham Schist fall in the range 155-193m.y., mostly between 157 and 162m.y., and provide a minimum mid-Jurassic age for the metamorphism associated with the Jurassic-Cretaceous Rangitata Orogeny in the Chatham Islands. The ages for Chatham Schist cannot be correlated with those obtained from other Rangitata metamorphic or igneous rocks from the Subantarctic islands of the Campbell Plateau, the South Island, New Zealand, and western Marie Byrd Land, Antarctica, which consistently yield Cretaceous ages (80-145 m.y.). An exception is the Bounty Islands granite (189m.y.) which appears to predate the Rangitata metamorphism. However, dates in the age range 160-180m.y. have been obtained from some intrusive rocks in the eastern part of West Antarctica. (Auth. mod.)

E-19470

Eastin, R., **Geochronology of the basement rocks of the central Transantarctic Mountains, Antarctica,** Columbus, Ohio State University, 1970, 215p., University Microfilms order No.71-7436, Ph.D. thesis. Refs. p.208-215.

This study is an attempt to determine the pre-Ross Orogeny history of the Transantarctic Mts. The means employed is the Rb/Sr whole rock isochron method of geochronometry. Suites of rock samples were obtained from five areas: the Nilsen Plateau in the Queen Maud Mts., the Thiel Mts., the Pensacola Mts., Coats Land, and western Queen Maud Land. Some samples were analyzed for Rb and Sr by isotope dilution; the remainder were analyzed for the Rb/Sr ratio by X-ray fluorescence. The earliest event detected was the crystallization of felsic flows interbedded in the Patuxent Formation of the Neptune Range, Pensacola Mts. These flows have an age of 1,210 m.y. The Patuxent Formation is therefore one of the oldest rocks in the Transantarctic Mts. The Littlewood Volcanics of Coats Land were found to have an age of 1,001 m.y. This result and the previously reported date of 840 m.y. by the K-Ar whole rock method may indicate that this area has not undergone later metamorphism in the Ross Orogeny, which is characteristic of the Transantarctic Mts. The volcanics of the Trollkjellrygg Group in western Queen Maud Land were found to have an age of 856 m.y. This area, and perhaps also Coats Land, is part of the East Antarctic Shield, not of the Transantarctic Mts. (Auth. mod.)

E-19476

Adie, R.J., **Geology of Antarctica: a review,** *Royal Society of London. Philosophical transactions,* 1977 Vol.279B, p.123-130, 20 refs.

Geological field work in Antarctica and the off-lying islands during the past two decades has contributed materially to the establishment of the stratigraphical succession in both East and West Antarctica. The tectonic evolution of Antarctica is discussed in relation to the known stratigraphical and structural data for the continent, and the role of Antarctica in several reconstructions of the former supercontinent of Gondwanaland critically examined. In this context, various aspects of the palaeogeography, palaeoclimatology, geochronology and stratigraphy of Antarctica are reviewed. (Auth.)

E-19508

Robinson, E.S., **Geological structure of the Transantarctic Mountains and adjacent ice covered areas, Antarctica,** Madison, University of Wisconsin, 1964, 290p., University Microfilms order No.64-10,301, Ph.D. thesis. Refs. p.261-274.

Seismic, gravimetric, and magnetic survey results outline the extent of the Transantarctic Mountain System beneath the ice cover, provide limited information about the upper crustal geology, and indicate gross variations in crustal thickness. The stratigraphic section is exposed from sea level to elevations in excess of 4 km along the western coast of the Ross Sea. Topographic data from seismic surveys show the mountain system to be of asymmetrical cross-section, steeper on the West Antarctic side. The system is approximately 200 km wide in the Victoria Land area and increases to about 400 km in the region of the Horlick Mountains. The ice covered area adjacent to the ranges in Victoria Land is characterized by an isostatic anomaly more negative than -30 mgal. Limited magnetic data show the Cenozoic volcanics to be definite sources of local anomalies.

E-19509

Glasby, G.P., ed, **Marine manganese deposits,** Elsevier oceanography series, 15, Amsterdam, Elsevier, 1977, 523p., Refs. p.461-510.

DLC QE390.2.M35M37

This volume on marine manganese deposits is comprised of fourteen chapters contributed by various authors. Following a historical introduction, the chapters cover the distribution and geochemistry of manganese nodules, fossil nodules, morphology, internal characteristics and mineralogy, accretion rates, manganese and iron in sediments, mechanisms of removal of trace metals from sea water, extractive metallurgy, and the economic, environmental, and legal aspects of nodule mining. Information pertinent to antarctic regions can be found on p.12, 14, 17, 20, 23, 30, 32, 39, 110, 112-114, 117, 229, 257, 281, 395 398, 404, and 406.

E-19543

Wilbanks, J.R., **Geology of the Fosdick Mountains, Marie Byrd Land, West Antarctica,** Lubbock, Texas Technological University, 1969, 245p., University Microfilms order No.70-12,335, Ph.D. thesis. Refs. p.176-181.

The Fosdick Mountains comprise a complex of biotite gneiss, migmatite, and quartzo-feldspathic nebulite, all of which contain mineral assemblages of the sillimanite grade of the almandine-amphibolite metamorphic facies. The physical dissimilarity of almandine in the paleosome portion of the migmatite from almandine in the neosome indicates at least two metamorphic episodes. Synmetamorphic deformation which accompanied mineral crystallization is documented. A description is given of two deformations, which are recognized in two systems of minor folds; the older fold, strikes northeast; the younger fold, strikes west-northwest. The metasedimentary rocks in the southern Ford Ranges represent the overlying superstructure of lower grade metamorphics. The existence of similar rock types of lower Paleozoic age across the Ross Sea along Oates Coast is noted.

E-19548

Rex, D.C., **Geochronology in relation to the stratigraphy of the Antarctic Peninsula,** *British Antarctic Survey. Bulletin,* Nov. 1976 No.43, p.49-57, Refs. p.55-56.

Eighty-four K-Ar ages are reported from the Antarctic Peninsula together with one whole-rock Rb-Sr isochron and five K-Ar ages from the South Orkney Islands. The geochronological implications for the stratigraphy of the Antarctic Peninsula are discussed. The Andean intrusive rocks give an age range from Jurassic to early Tertiary. Upper Palaeozoic-Mesozoic dates were obtained on the basement gneisses and schists, and Pliocene ages on most of the James Ross Island Volcanic Group. (Auth.)

E-19551

Light, J.J., **Unusual drainage system in an antarctic valley,** *British Antarctic Survey. Bulletin,* Nov. 1976 No.43, p.77-84, 3 refs.

The drainage system of a snall valley on Signy Island in the maritime Antarctic is described. Bathymetric surveys of the three lakes in the valley and observations on ice recession and under-ice streams were made. The highest lake was found to drain through the moraine damming it, and during winter when the inflow is frozen three-quarters of the lake water drained away. The fate of this water is discussed and it seems that the levels of two lower lakes are raised due to an accumulation of ice in their outflows through the winter. (Auth.)

E-19559

Stone, P., **Raised marine and glacial features of the Cooper Bay-Wirik Bay area, South Georgia,** *British Antarctic Survey. Bulletin,* Dec. 1976 No.44, p.47-56, 14 refs.

A series of raised beaches and wave-cut platforms up to 11 m. a.s.l. are described from part of the south-eastern coast of South Georgia. Complexes of moraine ridges in front of glacier snouts can be subdivided into three groups on the basis of relative size, degree of consolidation and vegetation cover. The glacier positions marked by these ridges probably correlate with glacial maxima described from the Cumberland Bay area of South Georgia at c. 5,500 yr. B.P. (Clapperton, 1971), A.D. c. 1875 and c. 1929 (Smith, 1960). The highest raised features, at 8.5 m. a.s.l., may represent outwash plains deposited during the first of these advances and graded to sea-level; beaches formed between the two more recent glacial maxima contain whaling relics from the 1904-25 period and range up to 2.5 m a.s.l. Very recent retreat of Twitcher Glacier has caused periodic lowering of the water level in an adjoining ice-dammed lake with the result that previous higher shorelines are now abandoned around its perimeter. Annual retreat of two glaciers is suggested by the regularity of the most recent moraine ridges. Rapid surface ablation has in places led to the formation of abundant dirt cones and perched boulders. (Auth.)

E-19565

Bell, C.M., **Sedimentary rocks from Charcot Island,** *British Antarctic Survey. Bulletin,* Dec. 1976 No.44, p.103-104, 2 refs.

Sedimentary rocks on Charcot Island suggest a 150 km. westward extension of the (?) Carboniferous sequence of Alexander Island. (Auth.)

E-19578

Palmer, A.S., **Sedimentological investigations of the englacial debris bands and associated melt-out deposits in the snout of Taylor Glacier, Antarctica,** Columbus, Ohio State University, 1976, 101p., Refs. p.80-83. B. Sci. Honors thesis.

The physiography and sedimentology of a small area of the snout of Taylor Glacier, South Victoria Land, is described. Taylor Glacier is unusual in that it has very clearly defined zones of debris-laden ice and is carrying a greater englacial load than neighboring glaciers. Three different entrainment models are considered: shearing and thrusting of material off the base of the glacier; basal freezing processes; and debris apron incorporation. All three have features consistent with morphological and sedimentalogical observations made in this study. (Auth. mod.)

E-19585

Akiyama, M., **Plankton and bottom deposits of Lake Funazoko-ike in Skarvs Nes, Antarctica,** *Shimane University. Faculty of Education, Natural Science. Memoirs (Shimane Daigaku. Kyoikugakubu Kyio. Shizen kagaku),* Dec. 1975 Vol.9, p.29-42, In Japanese with English summary.

Limnological and ecological studies were made on a high-salt lake Funazoko-ike located in the ice-free region of Skarvsnes, Antarctica. Chlorinity of waters collected vertically ranges from 133,000-156,000 ppm. A noteworthy halophilic alga *Dunaliella* sp. was found as the only living plankter of this saline lake. The sestonic components of the lake were mainly dead cells, or empty shells of diatoms and Silicoflagellate such as *Coscinodiscus, Triceratium, Chaetoceras, Corethron, Diploneis* and *Distephanus.* Moreover much colored, amorphous detritus was found. Two core samples of the lake deposits were collected from the bottom 8 meters below the surface. Mi-

crofossils detected from core samples of the lake deposits were similar to those of the lake seston, and we could not recognize the vertical differences of species constitution of the core. It seems that the recent lake deposits of lake Funazoko-ike may have originated from the terrace deposits (marine) distributed around the lake shore. (Auth. mod.)

E-19586

Kurasawa, H., **Volcanoes and volcanic rock in Antarctica,** *Journal of geography (Chigaku zasshi),* 1977 86(1), p.1-19. In Japanese with English summary. 22 refs.

The volcanoes and the mineralogy of volcanic rocks are discussed for the following areas: Marie Byrd Land; the coast of Victoria Land; Black and White Islands; Ross Island; the Antarctic Peninsula and Deception Island; the South Shetlands; and the South Sandwich Islands. Strontium isotope ratios of the Peninsula, Deception and Ross Islands are considered in relation to isotope values for oceanic islands to the north of them.

E-19634

Sclater, J.G., ***Islas Orcadas* cruise 11, Buenos Aires to Cape Town,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.62-65.

The research conducted during *Islas Orcadas* cruise 11 included a detailed geophysical survey, 53 conductivity-temperature-depth and dissolved oxygen stations, the recovery of 730 kg of rock from 15 dredge stations, and the recovery of 50 piston and trigger cores. During the geophysical survey around the Islas Orcadas Fracture Zone, a major ridge and a prominent seamount on either side of the spreading just west of the fracture zone were discovered. Sediment cores were taken on the Maurice Ewing Bank, on the northeast Georgia Rise, in the southeast Atlantic sector of the southern Ocean and on a north-south transect beneath the polar front. The cruise track and locations of stations are shown.

E-19635

Ciesielski, P.F., Sliter, W.V., Wind, F.H., Wise, S.W., Jr., **Cretaceous *Islas Orcadas* core from the Falkland (Malvinas) Plateau, southwest Atlantic,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.65-67, 7 refs.

A stratigraphic and paleoenvironmental analysis is made of a Cretaceous core recovered from the Falkland Plateau, which is compared with similar material from DSDP hole 327A. The core, 07-75-44, penetrated Campanian-Maestrichtian carbonate ooze and chert. Despite its proximity to Site 327, sharp faunal and floral changes, believed to be temperature-dependent, are noted between the two sites. The changes are attributed to a steepened gradient produced at the confluence of two separate water masses.

E-19636

Wise, S.W., Jr., Ciesielski, P.F., **Late Mesozoic-Cenozoic history of the eastern Falkland (Malvinas) Plateau based on piston and drill cores,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.67-70, 15 refs.

Paleontological and sedimentological data from piston and drill cores are presented in a geologic map and cross-section of older (pre-Pliocene) units sampled beneath Plio-Pleistocene siliceous ooze and glacial marine clastics that mantle the Plateau. Paleoecological differences between Cretaceous fauna and flora from opposite sides of the Maurice Ewing Bank suggest that the Falkland Plateau served as an important barrier between water masses in the South Atlantic during this time. Strong bottom currents associated with the Cretaceous Tertiary events, the early Miocene opening of the Drake Passage, and the late Miocene antarctic glaciation caused scouring and removal of significant volumes of sediment, contributing to the complex erosional history of the bank.

E-19637

Ciesielski, P.F., Wise, S.W., Jr., **Basal sediment ages of *Islas Orcadas* cruise 7 piston cores,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.70-72, 10 refs.

Preliminary basal sediment ages are presented for 45 piston cores taken on cruise 7. The multidisciplinary cruise, which began and ended at Buenos Aires, concentrated on the Falkland (Malvinas) Plateau, the South Georgia Basin, and peripheral areas. A table lists piston core numbers, latitude, longitude, water depth, sample interval, age, and sediment lithology of the basal sedimentary unit.

E-19639

Cassidy, D.S., Shepley, S., **Core recovery: USNS *Eltanin* and ARA *Islas Orcadas,*** *Antarctic journal of the United States,* Oct. 1977 12(4), p.75-76, 1 ref.

This article presents a graphic summary of recovery, by cruise, of marine sediment cores retrieved aboard *Eltanin* and *Islas Orcadas.* The data include core length for piston, trigger, Phleger, and camera-Phleger cores, total core recovery per cruise, number of cores retrieved per cruise, and average core length per cruise. Factors to be considered in evaluating the success or failure of a cruise are discussed. Ultimately, coring success is a function of the significance and value of the recovered materials to research objectives and the quality of research upon the sediments, regardless of total meterage recovered.

E-19640

Kovach, J., Faure, G., **Strontium isotopic study of sediment from the Ross Sea,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.77-78, 9 refs.

The observed Sr-87/Sr-86 ratios and Sr concentrations in sediment samples from core E32-25 from the Ross Sea support the hypothesis that the detrital silicate fraction of the Late Cenozoic sediment in the Ross Sea is dominantly a two-component mixture of material derived from the weathering and erosion of old sialic rocks (high Sr-87/Sr-86 ratios, low Sr concentrations) and young volcanic rocks of basaltic composition (low Sr-87/Sr-86 ratios, high St concentrations). The measured Sr-87/Sr-86 ratios and Sr concentrations are used to estimate the concentrations of volcanogenic detritus in the sediment samples by means of a two-component mixing model. The procedure is outlined and the estimates are given.

E-19641

Zemmels, I., **Sedimentary geochemical processes near the Pacific-Antarctic Ridge,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.78-79, 13 refs.

The purpose of this study was to establish geochemical trends in the vicinity of the Pacific-Antarctic Ridge (PAR), ascertain the presence of hydrothermal metallogenic activity on the PAR, and interpret the distribution of hydrothermal deposits in the light of two current theories of metallogeny on active midoceanic ridges. The results show that sediments remote from the PAR have compositions which are consistent with a theoretical mixture of lithogenous materials and ferromanganese precipitates. Sediments from the PAR and adjacent areas are Fe-rich with respect to Mn, Ni and Co, which is consistent with active-ridge hydrothermal deposition. Approximately 70 percent of the PAR samples are anomalously enriched in Cu, Zn and Pb, some as much as 10 standard deviations from the theoretical mixture of lithogenous materials and ferromanganese precipitates. Cu, Zn, and Pb anomalies also occur in the Southeast Pacific Basin. There is no continuity in the magnitude of Cu, Zn, and Pb enrichment; rather, they appear to be isolated pockets of enrichment.

E-19642

Hearn, P.P., Siegel, F.R., Pierce, J.W., **Mineralogy and major element chemistry of suspended sediments from the Chilean archipelago: R/V *Hero* cruise 76-4,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.79-81, 6 refs.

Six major elements (Si, Al, Fe, Mg, Ca, and K) were analyzed in suspended sediments collected from 40 stations along the southern coast of Chile, using X-ray fluorescence spectrometry. The methodology is described. The mineral suite in the sediments is dominated by chlorite and illite accompanied by subequal quartz, feldspar, talc, and amphibole. Talc is occasionally the dominent mineral phase. Magnesian calcite, dolomite, gypsum, and mixed layer clay are irregularly present. The averages, standard deviations, and ranges of the 6 major elements determined by the suspensates are tabulated. The data suggest a general relationship of chlorite with Mg, illite with Al and K, amphibole with Fe, and feldspar with Al and Ca.

E-19643

Hotchkiss, F.H.C., **Antarctic and southernmost South American fossil echinoids,** *Antarctic journal of the United States.* Oct. 1977 12(4), p.81, 8 refs.

Current research is directed toward study of undescribed collections of antarctic, Patagonian, and Chilean fossil echinoids of Cretaceous, Tertiary, and Plio-Pleistocene age and restudy of type and published specimens. The sources of the collections are given. The King George I. echinoids are the first to come from the South Shetland Is. Similar deposits occur at Cockburn I., Heard I., and in the McMurdo Sound region.

E-19644

Kellogg, T.B., Stuiver, M., Kellogg, D.E., Denton, G.H., **Marine microfossils on the McMurdo Ice Shelf,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.82-83, 4 refs.

Studies of the glacial history and marine microfossils of the McMurdo Ice Shelf are summarized. Glaciological investigations indicate that debris swirls and bands on the ice shelf are of at least two origins: one type remnant from a former westward-flowing grounded ice sheet, and the other inherent to the modern shelf. Micropaleontological analyses of samples reveal two distinctly different benthic foraminiferal faunas. A sample collected along the north coast of Black I., with a C-14 age of 1,290 yr, is dominated by the benthic fauna species *Ehrenbergina glabra.* The sample also contains many other species including *Trifarina earlandi* and *Globocassidulina subglobosa.* Two samples 5 to 10 km north of Black I. show a shift in benthic foraminiferal dominance to *Trifarina earlandi; E. glabra* is a minor constituent. All samples analyzed contain sponge spicules, echinoid spins, rare specimens of *Globigerina pachyderma,* ostracod shells, and fragments of bryozoa, molluscs, and corals.

E-19645

Cassidy, D.S., Wise, S.W., Jr., **Antarctic Marine Geology Research Facility, 1976-1977,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.83-84, 14 refs.

The program during the period July 1, 1976 to May 31, 1977 has been concerned primarily with distribution of samples, receipt of marine sediment cores retrieved aboard *Islas Orcadas* cruises 11 and 12, laboratory procedures involving the cutting and describing of these and *Islas Orcadas* cruise 7 cores, and publication and distribution of two volumes of core descriptions and attendant station location data for *Eltanin* and *Islas Orcadas* core materials. During this reporting period, 4,868 samples were distributed from the collections curated at the facility.

E-19646

Craddock, C., Webers, G.F., **Geology of the Ellsworth Mountains to Thiel Mountains ridge,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.85, 1 ref.

An area of scattered nunataks and small mountain ranges between the Ellsworth and Thiel Mountains comprises the only presently exposed geologic tie between West and East Antarctica. Within this area bedrock exposures occur in the Pirrit Hills, the Martin Hills, the Nash Hills, the Whitmore Mts., Pagano Nunatak, the Hart Hills, and the Stewart Hills. The geology of this region is briefly summarized.

E-19647

Wade, F.A., **Geology of Queen Maud Mountains and Marie Byrd Land,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.85-86.

During 1976-77, activities at the Antarctic Research Center were primarily restricted to data reduction, map compilations, and report preparation. A final report on the geology of the basement complex of Queen Maud Mountains was completed and submitted for publication. Continuing study of the geology of Marie Byrd Land is the major effort of the Center. Four geologic maps of western Marie Byrd Land have been completed: Alexandra Mountains, Guest Peninsula, Boyd Glacier, and Gutenko Nunataks. The first three have been published. A final report on the Swanson Formation, Ford Ranges was summarized in a paper presented at the Scientific Committee on Antarctic Research meetings in Madison, Wis. Plans for detailed surveys in central and eastern coastal Marie Byrd Land have been finalized. Camps will be established north of the Flood Range and south of the Kohler Mts.

E-19648

Grew, E.S., **With the Soviets in Antarctica, austral summer 1976-1977,** *Antarctic journal of the United States.* Oct. 1977 12(4), p.86-88, 5 refs.

The work of the author as an exchange scientist with the 22nd Soviet Antarctic Expedition (SAE) is summarized. The program of study focused on the petrology and geochronology of the Shackleton Range metamorphic complex. An important component of the 22nd SAE was a geologic, geophysical, and cartographic investigation of the Weddell Sea area, which was based at Druzhnaya. Geologic work in the Shackleton Range involved mapping and detailed stratigraphic-structural studies of the metamorphic complex and overlaying sedimentary rocks, collection of a Cambrian trilobite fauna discovered near Mt. Provender in 1975-76 and mapping and studies of glacial deposits and geomorphologic features.

E-19649

Ford, A.B., **Geological comparison of the Shackleton Range and the Pensacola Mountains during the 22nd Soviet Antarctic Expedition,** *Antarctic journal of the United States.* Oct. 1977 12(4), p.88-90, 10 refs.

Paleogeographic and paleotectonic relations between the Shackleton Range and the Pensacola Mts. have been studied as part of the 22nd Soviet Antarctic Expedition. In late Precambrian time the Pensacola Mts.-Shackleton Range region was part of a seaway that appears to have extended the entire 3,000-km length of the Transantarctic Mts. The Patuxent Formation in the Pensacola Mts. correlates approx with the Turnpike Bluff Group in the Shackleton Range. The Turnpike and younger units in the Shackleton Range were deposited on an eroded surface of an older Precambrian crystalline terrain that is part of the antarctic shield and dated at approx 1,500 m.y.a. A crystalline basement is not exposed in the Pensacola Mts., but a source of that type in the vicinity shed sediments into late Precambrian and Paleozoic basins of the area. Late Precambrian deposits in both the Pensacola Mts. and the Shackleton Range show evidence of an orogeny probably corresponding to the Beardmore orogeny elsewhere in the Transantarctic Mts. The Pensacola Mts. area was also in-

volved in the Ross orogeny in the late Cambrian and Ordovician and the Weddell orogeny of Triassic(?) age. Effects of the latter two orogenies have not been recognized in the Shackleton Range.

E-19650

Ford, A.B., Carlson, C., Czamanske, G.K., Nelson, W.H., Nutt, C.J., **Geological studies of the Dufek intrusion, Pensacola Mountains, 1976-1977,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.90-92, 19 refs.

The principal results of background geologic study of the Dufek intrusion and preliminary results of 1976-77 studies are summarized. The principal activities of the 1976-77 field work were 1) the geologic mapping of the Dufek Massif area at 1:250,000 scale for publication of 1:50,000-scale geologic maps showing distribution of the significant cumulate layers, 2) measurement of additional stratigraphic sections in areas not reached in earlier fieldwork, and 3) detailed sampling of selected stratigraphic intervals on Walker Peak, Neuburg Peak, and Aughenbaugh Peak to investigate the possible presence of cyclic units suggested by the analytical work on pyroxenes. A careful search was made for any evidence of metal concentrations, in particular, of sulfide minerals that might contain significant amounts of copper and nickel for a study of these minerals and their variation with fractionation. Only small concentrations of not more than a few percent were found in the Dufek Massif area. Other metal concentrations are given.

E-19652

Stump, E., **Metamorphic basement rocks, central Transantarctic Mountains,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.94-95, 11 refs.

These investigations, begun in 1970, reached a temporary conclusion in 1976. Comparative Antarctic and South African studies point up the importance of volcanism in the late Precambrian and Cambrian record of the central Transantarctic Mts. and the absence of volcanic rocks in equivalent sequences in southern Africa. Research in progress includes a detailed chemical study of volcanic rocks from the basement of the Queen Maud Mts. and coordination of the geological map of the Shackleton Glacier quadrangle (1:250,000).

E-19653

Nagata, T., **Japanese scientific activities in the McMurdo region, 1976-1977,** *Antarctic journal of the United States.* Oct. 1977 12(4), p.95-96.

Japanese activities for this report period included microseismological observations at Scott Base and Vanda Station, geological survey and sampling of typical rock specimens, geochemical studies of Don Juan Pond and Lake Bonney, and a search for meteorites. Two meteorites were collected from the bare-ice area west of Mt. Baldur and nine from the bare-ice area west of the Allan Hills.

E-19654

Cassidy, W.A., **Antarctic search for meteorites,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.96-98, 7 refs.

A search for meteorites in the blue-ice areas in the vicinity of McMurdo Station is reported. Two meteorites were found on ice at Mt. Baldr and nine on a blue ice field on the platcau side of the Allan Hills. The total weight of meteoritic material recovered was 461.5 kg. Excluding an exceptional 407 kg specimen, the average weight of the meteorites was 5 kg. This is in contrast to the Yamato meteorites, which, though many in number, have a total weight of about 100 kg and an average specimen weight of 100 g. It is concluded that local concentrations of meteorites can be found at many sites in Antarctica. The most favorable sites are areas where blue ice is exposed and is disappearing by ablation so that meteorites are left behind on the surface rather than moving away with the flow.

E-19655

Dalziel, I.W.D., **Geologic studies in the South Orkney Islands: R/V *Hero* Cruise 77-1, January 1977,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.98-101, 12 refs.

Geologic work on this program included structural investigations of the basement rocks of the South Shetland and South Orkney Is., the collection of metamorphic rocks from Coronation I. and other locations for petrologic study, investigation of the Mesozoic rocks of the South Orkneys, and the collection of fossils. A major step forward in the understanding of Antarctic Peninsula-South Scotia Ridge geology was made during this cruise with the recognition of a lithologic and structural transition along the west coast of Powell I. between the overlying Greywacke-Shale Formation of Laurie, Fredriksen, Powell, and the Saddle and Weddell I., and the underlying metamorphic complex of Coronation and Signy Is.

E-19656

LeMasurier, W.E., **Marie Byrd Land volcanology,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.101-102, 5 refs.

Project activities have focused on studies of intraglacial volcanoes in Marie Byrd Land, the tectonic relationships of volcanism, and origins of the lavas that make up the Marie Byrd Land volcanoes. The intraglacial volcanoes appear to be composed entirely of hyaloclastite, which provides a record of the history of the ice sheet in Marie Byrd Land. The volcanoes have been compared with analogous structures in New Zealand and in the Hawaiian Islands in order to better understand how to use the volcanic deposits to interpret glacial and tectonic history. Virtually all post-Paleozoic rocks in the region are igneous. The Cenozoic rocks are almost entirely volcanic, and Mesozoic rocks are predominantly intrusive. Petrologic characteristics that have important tectonic significance in the region are outlined.

E-19657

Decker, E.R., Bucher, G.J., **Geothermal studies in Antarctica,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.103-104, 6 refs.

Geothermal data from Dry Valley Drilling Project drill holes are summarized. The data include subsurface temperatures, thermal conductivities, and three preliminary heat flow values. Permafrost thicknesses are listed.

E-19658

Treves, S.B., **Geology of some volcanic rocks from the Ross Island, Mount Morning and southern Victoria Land areas,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.104-105, 1 ref.

The geology of volcanic rocks from Ross I., Ferrar, Taylor, and Wright Valleys, and Mt. Morning was studied. Inclusions were collected from Ross I. and identified. Preliminary study indicates that olivine (Mg-rich), clinopyroxene, amphiboles (mostly kaersutite), and calcic plagioclase megacrysts are optically and physically similar. The abundance, however, varies, and in some localities some mineral phases are absent. Spinel occurs in some of the rarer megacrysts. Inclusions of ultrabasic and basic rocks range from dunite to amphibolite. A significant number are feldspar-bearing. Surface exposures at Mt. Morning consist primarily of basaltic (basanite) vents constructed of lava flows, a few vents that resemble ash rings, and some basaltic (basanite) flows. These rest on poorly exposed, older trachyte flows (?) and plugs. The slopes are mantled by till. Volcanic rocks of the Ross I. province occur north of Mt. Morning as flows and vents on the lower slopes of the Royal Society Range, and in Taylor and Wright Valleys. Observations of the lava lake at Mt. Erebus indicate that it has increased in size; explosive activity has decreased.

E-19659

Ervin, C.P., Wolf, M.G., **Ground magnetic studies of volcanic rocks in the Taylor and Wright Valleys region,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.105, 4 refs.

Ground magnetic measurements were made across eleven volcanic patches (nine in Taylor Valley, one in Wright Valley, and one in the Asgard Range). Preliminary observations reveal anomalies ranging from several hundred to several thousand gammas. Although many of the anomalies have significant amplitude, they have rather short wavelengths and would be easily missed by an aeromagnetic survey using a 2-km line spacing and a discrete sampling interval.

E-19660

Bockheim, J.G., **Soil development in the Taylor Valley and McMurdo Sound area,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.105-108, 1 ref.

Soil studies are summarized for the field seasons 1975-76 and 1976-77. Detailed descriptions were made of 97 soil profiles on moraine crests and ground moraine representative of Ross Sea, Taylor, and alpine glaciations. 418 soil samples were collected and laboratory data were compiled for 282 samples representing 68 soil profiles. These analyses included pH, specific conductivity, water-soluble cations, water-soluble anions, and particle-size distribution. Extractable iron and silt and clay mineralogy were determined on selected soils derived from till deposited by Taylor Glacier. Surface weather features were recorded. Morphologic characteristics of soils derived from drift bearing 1) mixed igneous and metamorphic rocks in the lower Taylor Valley, and 2) rocks from the Beacon Supergroup in the upper Taylor Valley are given relative to the age and lithology of the drift. The effects of Glacial Lake Washburn on soil morphology in the lower Taylor Valley are discussed.

E-19661

Kyle, P.R., **Petrogenesis of Ferrar Group rocks,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.108-110, 13 refs.

Jurassic Ferrar Group rocks occur as lava flows (Kirkpatrick Basalts), dolerite sills and dykes (Ferrar Dolerite), and volcanic breccias and mudflows (Mawson Formation). Major element analysis of the chilled margins of Ferrar Dolerite sills and dikes indicate three main magma compositions: olivine tholeiite, hypersthene tholeiite, and pigeonite tholeiite. Kirkpatrick Basalt flows span the range hypersthene tholeiite to pigeonite tholeiite. Kirkpatrick Basalts show a well developed crystallization tend similar to that in the Dufek Intrusion. The major element chemistry of the Ferrar Group rocks is compatible with a model of evolution by fractional crystallization processes. To test such a model, mass balance equations have been developed using analyses of phenocryst phases found in Kirkpatrick Basalt lavas, mineral phases in the Dufek Intrusion, and mineral phases in Kirkpatrick Basalt lavas at Storm Peak. The calculations strongly support a differentiation model for all Ferrar Group rocks. Faure et al (1974; E-15934) proposed a contamination model for the Storm Peak Kirkpatrick Basalt. Reasons for considering this model unlikely are enumerated.

E-19662

Schopf, J.M., **Coal forming elements in permineralized peat from Mountain Augusta (Queen Alexandra Range),** *Antarctic journal of the United States,* Oct. 1977 12(4), p.110-112, 9 refs.

Plant remains in Permian peat specimens from the Queen Alexandra Range are dominated by the root species *Vertebraria.* Two distinctly different types of organic preservation, colored brown and black are evident, which are not attributable to kinds of plants, to mineralization, recrystallization, or weathering. The change leading to this difference in organic preservation occurred very early in diagenesis, prior to mineralization. Many of the permineralized blocks from Mt. August contain a preponderance of the black organic material (inertinite). Estimates are made of the kinds of peaty material occurring in the deposits. The Mt. Augusta permineralized peaty material tends to confirm the suggestion that in comparison with northern coals, Gondwana coals have a higher concentration of inertinite than vitrinite. Possible explanations for the deficiency of vitrinite in Gondwana coals are offered.

E-19663

Zeller, E.J., Dreschhoff, G., Crisler, K., **Resource and radioactivity survey in southern Victoria Land,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.112-113, 2 refs.

A gamma-ray survey was made of exposed rocks in the Transantarctic Mts. to assess the uranium resource potential of the area. The pegmatites of the lit par lit sequence at Mt. Dromedary and Roaring Valley are the most interesting occurrences found to date. The sequence shows discrete uranium and thorium minerals and is very extensive. Similar radioactive pegmatite veins were found in Garwood Valley and on the divide between the Radian and Pipecleaner glaciers. An area of fluorite bearing marble was also discovered on the divide. The feasibility of using gamma-ray detectors to locate fallout zones in snow layers on the Ross Ice Shelf was tested.

E-19664

Washburn, A.L., **Analysis of permafrost cores from antarctic dry valleys,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.113-115, 5 refs.

Dry Valley Drilling Project cores were analyzed for siliceous microfossils (3, 4, 4A, 8-12), oxygen isotopes (8-12), soil chemistry (8-10), stratigraphy and sedimentology (8-11). The results are summarized. The cores and their locations are as follows: 3 (Ross I.), 4 and 4A (Lake Vanda), 8-10 (New Harbor), 11 (Commonwealth Glacier), and 12 (Lake Leon). No siliceous microfossils were found in cores, 4, 4A, 9, and 12. The oxygen-isotope and chronology data for cores 8-10 have been published and indicate that core sediments associated with the last intrusion of the Ross Ice Shelf in the New Harbor region were deposited in a marine environment as well as a fresh-water environment and that the extension of the Ross Ice Shelf postdates 150,000 yr B.P.; its retreat is radiocarbon dated at about 5,800 y.a. Electrical conductivity values for cores 8-10 at New Harbor are plotted.

E-19665

McGinnis, L.D., Osby, D.R., **Logging summary of the Dry Valley Drilling Project,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.115-117, 5 refs.

Gamma radiation, electrical resistivity, and spontaneous potential (S.P.) log descriptions are given for nine of the 15 Dry Valley Drilling Project boreholes: 2 and 3 (Ross I.), 6 (Lake Vida), 8 and 10 (New Harbor), 11 (Commonwealth Glacier), 12 (Lake Leon), 13 (Don Juan Pond), 14 (North Fork), and 15 (McMurdo Sound). In general, crystalline rock in the dry valley region is considerably more radioactive than sedimentary rock. Marine sediments are slightly more radiogenic than terrestrial. The gamma log curve at Lake Vida shows wide variations in banded crystalline rock; however, in massive granites the curve tends to stabilize and remain near the higher radioactive materials in the dry valleys. Some of the volcanic rocks of Ross I. contain higher amounts of radiogenic material than any other orcks in the dry valley region; however, the olivine basalts and hyaloclastites at depth in boreholes 2 and 3 display very low radiogenic levels. The salinity and gamma logs at Don Juan Pond appear to corroborate the arguments favoring ground water recharge into the pond. The lowest salinities are found in the Ferrar Dolorite, which is presumed to be the conduit through which sub-ice sheet water is discharged to the glacial periphery.

E-19666
Brady, H.T., **Freshwater lakes in Pleistocene McMurdo Sound,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.117-118, 11 refs.

Evidence from Dry Valley Drilling Project (DVDP) hole 15 suggests that at least part of McMurdo Sound (or even the entire Sound) experienced freshwater lacustrine conditions in the past and the McMurdo Sound was an oasis as unusual as present day dry valleys. Lacustrine conditions below the present day sea floor are explained either by a grounded Ross Ice Shelf blocking McMurdo Sound in the north and southeast, or by ice sheet disintegration during stands of low sea level. Since the dominant lithology of hole 15 is basaltic, it is doubtful that the material was deposited by ice entering the Sound from the North. Ice streams flowing from Mt. Discovery, Minna Bluff, Brown Peninsula, and Black I. transport predominantly basaltic material and are the more logical origin for the hole 15 sediments. The chronology of events indicated by the sedimentary succession in hole 15 and the significance of the presence of lacustrine sediments in McMurdo Sound are discussed.

E-19667
Colbert, E.H., **Cynodont reptiles from the Triassic of Antarctica,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.119-120, 3 refs.

Thrinaxodon liorhinus, a Triassic tetrapod typical of South African sediments, has been positively identified among the fossils collected from the Fremouw formation of Antarctica. The find establishes another link in connecting the Lower Triassic tetrapods of Antarctica with those of South Africa.

E-19668
Webers, G.F., **Paleontological investigations in the Ellsworth Mountains, West Antarctica,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.120-121, 3 refs.

Antarctic faunas from the Heritage Range, including a new Late Cambrian trilobite fauna collected in the 1975-76 austral season, have been under study. Twenty species of mollusks are present representing the four molluscan classes: Monoplacophora, Hyolitha, Gastropoda, and Rostrochonchia. Forms transitional to the Cephalopoda are also present. Monoplacophora are the dominant forms. The depositional environment of the fauna appears to have been shallow marine and possibly littoral. There appears to have been a marked period of adaptive radiation for the mollusks in the Late Cambrian of West Antarctica.

E-19669
Tasch, P., **Intercontinental correlation by conchostracans and palynomorphs from Antarctica, western Australia, India, and Africa,** *Antarctic journal of the United States.* Oct. 1977 12(4), p.121, 2 refs.

Intercontinental correlations between the conchostracan fauna and palynomorphs of Antarctica, western Australia, India, and Africa are briefly discussed. Cosmopolitan distribution of Mesozoic conchostracan genera in the southern continents including Antarctica is attributed to continental ligature or proximity. By contrast the conchostracan speciation program was restricted to local or regional situations (isolated lakes or ponds).

E-19670
Kyle, R.A., Schopf, J.M., **Palynomorph preservation in the Beacon Supergroup of the Transantarctic Mountains,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.121-122, 6 refs.

Over 500 samples from the Beacon Supergroup have been processed for palynological study. In some areas only 25% of the samples processed yielded palynomorphs. In the Ohio Range, the yield was somewhat higher: about 50% contained palynomorphs, but in all cases the material was too poorly preserved to furnish worthwhile information. The poor preservation or absence of palynomorphs in this region may be due to thermal metamorphism. For future work it is suggested that light grey to black mudstone to fine sandstone samples are most likely to be productive.

E-19671
Brady, H.T., ***Thalassiosira torokina* n.sp. (diatom) and its significance in Late Cenozoic biostratigraphy,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.122-123, 3 refs.

Thalassiosira torokina n.sp. occurs in Dry Valley Drilling Project holes 10, 157.76 to 183 m, and 11, 202 to 291 m: Deep Sea Drilling Project hole 266, core barrels 8/1 to 9/4: and in *Eltanin* core 34-19, 1.50 to 2.50 m. The species description, stratigraphic range and related species are discussed. Present indications are that this species is restricted to the early Pliocene.

E-19672
Brady, H.T., **Extraction of diatoms from glacial sediments,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.123-124, 6 refs.

A technique for the extraction of diatoms from glacial sediments is described. The processing steps include boiling samples in hydrogen peroxide and using a solution of zinc bromide to float diatom frustules and separate them from quartz and other common minerals. *Thalassiosira oestrupi* (Ostenfeld) was discovered in DVDP hole 11 at 204 m by this method.

E-19740
Orlenok, V.V., **Geomorphology of the ocean floor** [Geomorfologiia dna okeana], Kaliningrad, 1976, 144p., In Russian. Refs. p.140-142.

DLC GC83.O74

The most recent data on ocean-floor geomorphology and the newest hypotheses concerning its evolution are presented in this textbook. The relationship between endogenous and exogenous relief formation is examined on the basis of geophysical data analysis and deep-water drilling findings. Present-day methods and equipment for the study of underwater relief are described in detail. All maps, charts, and discussions in the chapters devoted to the Atlantic, Pacific and Indian Oceans include antarctic waters.

E-19779
Vennum, W.R., **Igneous and metamorphic petrology of the southwestern Dana Mountains, Lassiter Coast, Antarctic Peninsula,** *U.S. Geological Survey. Journal of research,* Jan.-Feb. 1978 6(1), p.95-106, 33 refs.

The report discusses the petrography, geochemistry, and igneous history of the plutonic rocks of the southwestern Dana Mountains which were studied in detail during the austral summers of 1969-70, 1970-71, and 1972-73. Also described are the contact metamorphic effects produced in the sedimentary country rocks and the evidence that the igneous phases were contaminated by significant assimilation of sedimentary country rocks and older igneous rocks.

E-19791
Sobotovich, E.V., **Early Azoic age of the earth's oldest rocks (based on results of lead-isotope studies of crystalline mountain rocks from the Antarctic platform)** [Ranneazoĭskiĭ vozrast drevneĭshikh porod Zemli (po rezul'tatam svintsovo-izotopnykh issledovaniĭ kristallicheskikh gornykh porod Antarkticheskoĭ platformy)], *Akademiia nauk SSSR. Komissiia po opredeleniiu absoliutnogo vozrasta geologicheskikh formatsiĭ. Trudy sessii*, 1976 No.18, p.59-70, In Russian. 31 refs.

DLC QE508.A4

Using lead-isochronous dating methods the authors determined the age of the crystalline base of the Antarctic and East Siberian platforms. Basic crystalline shales (four probes), enderbites (two probes) in Enderby Land, and basic crystalline shales of the Okhotsk central formation (five probes) are 3,700, 4,000 and 4,100 my respectively. The average age of Antarctic rocks is 3,800 my.

E-19796
Bogorodskiĭ, V.V., Trepov, G.V., Sheremt'ev, A.N., **Investigation of a subglacial lake near Molodezhnaya Station** [Issledovanie podlednikovogo ozera v raĭone stantsii Molodezhnaia], *Meteorologiia i gidrologiia*, Aug. 1977 No.8, p.29-33, In Russian with English summary. 4 refs.

Results of radio echo sounding of a lake in Antarctica near Molodezhnaya are discussed. It is found that the lake extends under the glacier farther than previous maps had indicated. Drilling confirmed radio echo soundings.

E-19797
Apostolescu, V., Institut français du pétrole, **Geologic map of Antarctica: 1:2,500,000** [Carte géologique de l'Antarctique 1/2 500 000], Paris, Éditions Technip, 1977, 23p., 8 sheets and explanatory pamphlet. 42 refs. In French with English summary.

As part of a survey of the morphostructural features of Antarctica from Landsat-1 and 2 satellites imagery (formerly ERTS), financed by the Institut Français du Pétrole (IFP) and the Centre National pour l'Exploitation des Océans (CNEXO), the IFP Geology Division has made a 1:2,500,000 geological map in three colors and seven sheets with the format 63.5 x 77.5 cm. This map is a working document designed to provide geologists interested in this continent with a synthetized view of its stratigraphic and tectonic evolution since the Archean. It has been compiled from existing 1:1,000,000 geological maps, bibliographic data and morphological and structural elements inventoried from Landsat imagery. All outcrops, geologically identified or not, and the main lineaments have been mapped. In the explanatory instructions accompanying the map, readers will find information on, in particular: the compilation principle of the map; the general morphology of Antarctica; the stratigraphic and tectonic evolution; the interpretation of the lineaments. (Auth.)

E-19805
Grindley, G.W., Adams, C.J.D., Lumb, J.T., Watters, W.A., **Paleomagnetism, K-Ar dating and tectonic interpretation of Upper Cretaceous and Cenozoic volcanic rocks of the Chatham Islands, New Zealand,** *New Zealand journal of geology and geophysics*, 1977 20(3), p.425-467, Refs. p.460-463.

New K-Ar age determinations on basaltic volcanic sequences in the Chatham Islands, 900 km east of South Island, New Zealand, combined with additional field and paleontologic studies, have led to a stratigraphic revision and the recognition of three distinct volcanic episodes—Late Cretaceous (70-85 m.y.), Eocene-early Oligocene (35-53 m.y.), and late Miocene-Pliocene (2-6 m.y.). Paleontology, palynology, and K-Ar dating place the earliest alkali basalt-trachyte volcanism of the Kahuitara Tuff and Southern Volcanics in the early Senonian, at the time of separation of the Chatham Rise-Campbell Plateau block from West Antarctica. Paleomagnetic measurements indicate Pliocene and Eocene palcopole positions similar to the present, but the Late Cretaceous pole positions differs by 19 deg suggesting a relative northward drift of the Chatham Rise-Campbell Plateau block from West Antarctica, with little change in declination, in good agreement with sea-floor spreading data. Assuming that the geomagnetic pole has remained within Antarctica for the past 90 m.y., as implied by paleomagnetic studies on Antarctic and East Australian rock sequences, the paleomagnetic results do not permit a significant independent clockwise rotation of the Chatham Rise relative to the New Zealand mainland as postulated in some geotectonic models. (Auth. mod.)

E-19810
Walcott, R.I., **Present tectonics and Late Cenozoic evolution of New Zealand,** *Geophysical journal*, Jan. 1978 52(1), p.137-164, Refs. p.160-162.

The nature of the deformation within the boundary zone between the Pacific and Indian plates in New Zealand is investigated through 1) present-day observations of its seismicity, patterns of horizontal shear, and vertical movements, and 2) exploration of the evolution of the boundary zone by extrapolating the present deformation pattern back in geological time, using the geological record and the history of relative motions between the plates as guides. The position of the poles of rotation for the Pacific/Antarctic, Antarctic/Indian, and Pacific/Indian plate pairs are considered.

E-19848
McCoy, F.W., Zimmerman, H.B., Krinsley, D., **Zeolites in South Atlantic deep-sea sediments,** *California. University. Scripps Institution of Oceanography, La Jolla. Initial reports of the Deep Sea Drilling Project*, 1977 Vol.39, p.423-441, Refs. p.440-441.

DLC QE39.C3

The stratigraphic and areal distribution of zeolites and their sedimentary associations in deep-sea sediments of the South Atlantic have been determined by examination of all available pre-Quaternary core and dredge material as well as sediment recovered from deep drilling. Clinoptilolite occurs in association with three dominant sediment components: volcanic, biosiliceous, and turbidite/clays, each of which may provide a source of silica for authigenic formation. Through time, the relative importance of these associations has changed significantly, reflecting the development of lithofacies and evolution of the South Atlantic basin. (Auth.)

E-19849
Emelianov, E.M., **Geochemistry of sediments in the western central Atlantic, DSDP Leg 39,** *California. University. Scripps Institution of Oceanography, La Jolla. Initial reports of the Deep Sea Drilling Project*, 1977 Vol.39, p.477-492, Refs. p.491-492.

DLC QE39.C3

Twenty chemical elements were studied and calcium carbonate, carbon dioxide and organic carbon were determined in samples of sediments from the western and southern central Atlantic Ocean. Calcium carbonate data indicate that the conditions of carbonate accumulation changed sharply near the Paleocene-Eocene boundary. This change was probably the result of increased antarctic glaciation and penetration of colder bottom water into the Argentine Basin.

E-19850
Fodor, R.V., Keil, K., Husler, J.W., McKee, E.H., **Petrology and K-Ar age of volcanic tuff and ash from the Walvis Seamount province, DSDP Site 259, Leg 39,** *California. University. Scripps Institution of Oceanography. La Jolla. Initial reports of the Deep Sea Drilling Project.* 1977 Vol.39, p.525-536, Refs. p.535-536.
DLC QE39.C3

An ash-flow tuff of 3.3 m thickness cored from a seamount at the southwest extremity of the Walvis Ridge has trachytic bulk composition and contains abundant alkali feldspar, clinopyroxene, biotite, and Fe-Ti oxides in a dusty, partly devitrified matrix. Moderately compacted pumice lapilli are abundant, but no original shard structures remain. The relative freshness and absence of graded bedding and marine material indicate that the tuff was emplaced subaerially. Fossils in overlying sediments indicate an open-marine environment about 40 m.y. in age. Within those sediments are three ash layers, 3.6, 4.0, and 4.6 m above the tuff. The ash is composed of high-SiO2 glass and contains alkali feldspar, hedenbergite, and Fe-Ti oxides. The feldspar in the trachytic ash flow gives a K-Ar age of 40.1 m.y. 520 $The ash-flow tuff is compositionally similar to trachytes on the nearby islands of Tristan da Cunha and Gough (moderately alkalic volcanic provinces). The seamount it caps probably represents a volcanic center that originated on or near the Mid-Atlantic Ridge at least 50 m.y. ago, differentiated from basalt to trachyte, and migrated northeastward. The ash layers in overlying sediments indicate that intermediate to silicic volcanism persisted in the region of the seamount until at least late Eocene. (Auth.)

E-19851
Supko, P.R., Perch-Nielsen, K., **General synthesis of Central and South Atlantic drilling results, Leg 39, Deep Sea Drilling Project,** *California. University. Scripps Institution of Oceanography, La Jolla. Initial reports of the Deep Sea Drilling Project,* 1977 Vol.39, p.1099-1131, Refs. p.1128-1131.
DLC QE39.C3

This general synthesis of drilling results on Leg 39 sheds light on the morphology and chronology of circulation and current development in antarctic waters. The opening of the Drake Passage, the formation of Antarctic Bottom Water, and the appearance of the Antarctic Convergence are discussed.

E-19852
McCoy, F.W., Zimmerman, H.B., **History of sediment lithofacies in the South Atlantic Ocean,** *California. University. Scripps Institution of Oceanography, La Jolla. Initial reports of the Deep Sea Drilling Project.* 1977 Vol.39, p.1047-1079, Refs. p.1075-1079.
DLC QE39.C3

Changes in sediment types (lithofacies) and sediment components (carbonate, foraminifers, calcareous nannoplankton) in the South Atlantic Ocean from Early Cretaceous through Pliocene are portrayed on a series of palinspastic maps which graphically document the sedimentological succession as this ocean basin evolves. Determination of peleolithofacies is based upon smear slide analyses of dated sediment from the base of over 300 piston cores and dredges which provides a broad regional coverage and supplements DSDP drilling data (with Leg 39 results as the primary data base). These maps graphically illustrate the development of oceanic circulation, CCD levels, terrigenous sediment influx, and biological productivity concomitant with changing sea-floor physiography, cycles of transgression and regression, and the Tertiary climatic deterioration.

E-19860
Nullo, F., Proserpio, C., **Taquetren Formation in the Chubut River valley, its stratigraphic relationships within Patagonia, and similarities with Mount Flora, Antarctica** [La Formación Taquetren en cañadón del Zaino (Chubut) y sus relaciónes estratigráficas en el ambito de la Patagonia, de acuerdo a la Flora, Republica Argentina], *Associación Geologica Argentina. Revista,* Apr.-June 1975 30(2), p.133-150, In Spanish with English summary. Refs. p.149-150.

An andesitic volcanic and sedimentary sequence, represented by the Taquetren Formation, extends from the middle course of the Chubut River up to the latitude of Ing. Jacobacci, prov. of Río Negro. Based on its paleontologic contents and stratigraphic relationships it has been dated as Upper Jurassic. The type locality of the Taquetren Formation is described, and its age correlated with that of Cañadón Asfalto Formation in Chubut, Matilde Formation in Santa Cruz and Mount Flora Formation in the Antarctic. Volcanic facies of the Taquetrén Formation is correlated with the Jurassic Effusive Series, which overlies the Mount Flora Formation.

E-19868
Anderson, J.B., Clark, H.C., **Sediments and sediment processes on high latitude continental shelves,** Offshore Technology Conference, 9th, May 2-5, 1977, Houston, Texas, Vol.1, 1977, p.91-96, 11 refs.

Sediment cores taken from two modern glacial marine environments, the Ross and Weddell Seas, have been examined. From these data a glacial marine sedimentation model which relates sediment facies patterns to depositional processes was developed. This model is intended to aid geologists in predicting regional sediment distribution patterns from seismic and bore hole data. Engineering properties of common glacial marine sediment types are discussed along with engineering problems unique to glacial marine environments. (Auth.)

E-19869
Sclater, J.G., Dick, H., Norton, I.O., Woodroffe, D., **Tectonic structure and petrology of the antarctic plate boundary near the Bouvet triple junction,** *Earth and planetary science letters.* Jan. 1978 37(3), p.393-400, 12 refs.

An en echelon suite of four fracture zones, trending approximately N40E, has been discovered during a survey of the Southwest Indian Ocean Ridge between Bouvet Island and 14E. The largest of these fracture zones, the Islas Orcadas and Shaka, are less than 30 km wide, have more than 3 km of vertical relief, and are respectively 100 and 200 km in length. The morphology of these and the Bouvet and Prince Edward fracture zones have been used to compute a pole for the relative motion between Africa and Antarctica. This pole, at 4S and 32W, is within the range of previously computed pole positions. Ridge basalts were dredged at the Conrad fracture zone, the Islas Orcadas fracture zone, and at the ridge crest near 11E. In addition, samples from a probable upper mantle intrusion were recovered from one wall of the Islas Orcadas fracture zone. The opposite wall was very different, consisting entirely of normal mid-ocean ridge basalt. (Auth. mod.)

E-19870
Gleadow, A.J.W., Lovering, J.F., **Fission track geochronology of King Island, Bass Strait, Australia: relationship to continental rifting,** *Earth and planetary science letters.* Jan. 1978 37(3), p.429-437, 23 refs.

Fission track ages have been determined on sphene and apatite from the granitic rocks of King Island in Bass Strait, southeastern

Australia. Sphene ages compare very closely to earlier K-Ar measurements and indicate an emplacement age of about 350 m.y. for the east coast group of granites and their important scheelite mineralization. Apatite ages are all younger by about 80-200 m.y. suggesting that fission tracks were not fully retained in this mineral until the Cretaceous. During the Cretaceous King Island was at the edge of the developing Otway Rift Valley which resulted in the breakup of Australia and Antarctica. Differing degrees of uplift, at least partly fault controlled, have produced a regular pattern of apatite ages across the island. A relationship between apatite fission track ages and continental breakup may be a widespread phenomenon which could give valuable insight into the thermal and tectonic development of rifted continental margins. (Auth. mod.)

E-19874

McGowran, B., **Stratigraphic record of Early Tertiary oceanic and continental events in the Indian Ocean region,** *Marine geology*, Jan./Feb. 1978 26(1/2), p.1-39, Refs. p.34-39.

Primarily on the evidence of planktonic foraminifera, correlations are made among oceanic sections (northern and eastern Indian Ocean and southwest Pacific Ocean) and composite continental successions (India-Pakistan, Australian region). The paper discusses the stratigraphic patterns thus perceived and their possible meaning in terms of chronological relationship to tectonic, oceanic and climatic/biogeographic events. The stratigraphy reflects isochronous, "sudden", platewide geohistory. The available evidence indicates plate-tectonic rearrangement at about the time of the Paleocene/Eocene boundary with responses then and subsequently in the stratigraphic, climatic and foraminiferal-biogeographic record. The significance of Australia/Antarctica separation during the Eocene is discussed.

E-19875

Markl, R.G., **Further evidence for the Early Cretaceous breakup of Gondwanaland off southwestern Australia,** *Marine geology*, Jan./Feb. 1978 26(1/2), p.41-48, 25 refs.

Magnetic anomalies adjacent to the northwest margin of the Naturaliste Plateau are identified as Early Cretaceous reversals M-0 through M-4. These lineations indicate that northwest-southeast sea-floor spreading began off the present Naturaliste Plateau circa 118 m.y. B.P., 8 m.y. later than along the adjacent continental margin off Perth. The role of sea-floor spreading between the plateau and Antarctica is considered as a possible alternative to account for the disparity in onset of spreading in the Naturaliste Plateau area. The Naturaliste and Perth lineation sequences are offset 130 km dextrally by a fracture zone which passes near DSDP Site 257. The data indicate that an intracratonic small ocean basin existed seaward of Perth from about 126 to 118 m.y. B.P. (Auth. mod.)

E-19876

Kidd, R.B., Davies, T.A., **Indian Ocean sediment distribution since the Late Jurassic,** *Marine geology*, Jan./Feb. 1978 26(1/2), p.49-70, Refs. p.68-70.

Cores obtained by deep sea drilling in the Indian Ocean provide a sedimentary record from which are deduced changing patterns of sedimentation through the Late Mesozoic and Cenozoic. Comparisons between: (1) empirical subsidence curves and sediment sequences at individual sites; and (2) paleobathymetric reconstruction maps and past sediment distributions, convincingly demonstrate the interrelationship of sedimentary and tectonic development within this the most recently formed of the major oceans. The role of antarctic tectonic activity and of antarctic bottom water circulation in the sediment distribution of the Indian Ocean is considered. (Auth. mod.)

E-19877

Manzoni, M., **Report on the geology of the dry valley region, Transantarctic Mountains** [Rapporto sulla geologia della regione delle valli secche (Catena Transantartica)], *Società geologica italiana, Rome. Bolletino*, 1973 Vol.92, p.85-113, In Italian with English summary. Refs. p.111-113.

The basic geology of the Dry Valleys area is outlined briefly. The crystalline and metamorphic basement underwent two main orogenic cycles during the Upper Precambrian and the Ordovician times: the metamorphic Ross supergroup is intruded by plutons dated to 930-1,000 m.y. and by the more recent Granite Harbour supergroup, 450 m.y. old. Following a peneplanation, mainly continental beds were deposited from the Devonian to the Lower Jurassic (Beacon Series). Several large sheets and dykes of the Jurassic Ferrar Dolerites are intruded in the older rocks. The onset of the ice cap, the tectonic uplifting of the Transatlantic chain and recent volcanic activity are the three main geologic processes of the Cenozoic era. Several local detailed observations were made during a geological excursion in 1968-69: patterns of intrusive bodies of dolerites, sedimentary features in the Beacon beds, and silicified Triassic plant remains. (Auth. mod.)

E-19916

Nagata, T., ed, **Proceedings of the second Symposium on Yamato Meteorites,** *Tokyo. National Institute of Polar Research. Memoirs*, Feb. 1978 Special issue No.8, 267p., Refs.

This volume contains 22 papers presented at the second symposium on Yamato meteorites. Details of the field work in search of meteorites in East Antarctica in 1974 and 1975 are reported and the first report of a new U.S.-Japan joint program of *Antarctic search for meteorites* in West Antarctica is presented. The papers are concerned with various aspects of meteorite distribution in Antarctica, mineralogical and petrographical characteristics, specific chemical studies on rare gas and rare elements of Yamato stony meteorites, isotope analyses, magnetic analyses and metallographic studies of an iron and a pallasite. The Yamato meteorite collection presently contains a total of 1002 pieces. For abstracts of papers presented see E-19917 through E-19920, E-19922 through E-19938, and F-19921, or 32-2992 through 32-2995.

E-19917

Yanai, K., **Yamato-74 meteorites collection, Antarctica from November to December 1974,** *Tokyo. National Institute of Polar Research. Memoirs*, Feb. 1978 Special issue No.8, p.1-37, 15 refs.

663 new Yamato meteorites have been found around the Yamato Mountains from Nov. to Dec. 1974 by the meteorite searching team of the 15th Japanese Antarctic Research Expedition. In 1974, 1975 and 1976 more than 158 pieces had been found by a systematic search on the bare ice surface of an area of 10 km square where only 18 pieces were found in 1969 and 1973. Besides ordinary cases, there were two meteorites showing different modes of occurrence, one was found buried in the ice and the other lay on the firn (compact snow). This collection, with specimens ranging in weight from 5,575 to 0.1 grams, was named Yamato-74 meteorites and the specimens were designated as Yamato-74001 to Yamato-74663 in order of discovery. They comprised one stony-iron (pallasite), 24 acondrites and many chondrites including carbonaceous chondrites, but no iron meteorite was found as was the case with earlier findings. Field occurrences and features of Yamato-74 meteorites are described in some detail, and a possibility of discovery of more meteorites is suggested. (Auth.)

E-19918

Matsumoto, Y., **Collection of Yamato meteorites, East Antarctica in November and December 1975, and January 1976,** *Tokyo. National Institute of Polar Research. Memoirs,* Feb. 1978 Special issue No.8, p.38-50, 8 refs.

From Nov. 12, 1975, to Jan. 24, 1976, a seven-man party of the 16th Japanese Antaretie Researeh Expedition, 1974-1976, made an oversnow traverse to the Yamato Mountains area for the purpose of searehing for meteorites and eonduеting geologieal and geomorphologieal surveys. A total of 307 meteorites was eolleeted during the traverse. Forty-one pieees among 307 were found at the southeast end of the Yamato Mountains, whieh is the same area as that for the 1969, 1973 and 1974 eolleetions, 249 pieees were found on the southwest side of the Mountains, the same area as the 1973 and 1974 eolleetions, 10 pieees were found at the northeast end of the Mountains, and 7 pieees were found in the east-southeast area of Massif D in the Mountains. Two of the eollected pieees were iron meteorites and the rest were stony meteorites. (Auth.)

E-19919

Yanai, K., **First meteorites found in Victoria Land, Antarctica, December 1976 and January 1977—Report of the U.S.-Japan joint program titled "Antarctic Search for Meteorites" 1976-1977,** *Tokyo. National Institute of Polar Research. Memoirs,* Feb. 1978 Special issue No.8, p.51-69, 7 refs.

Eleven new meteorites were recovered from the bare iee surfaee of South Victoria Land during the period from Dec. 15, 1976, to Jan. 20, 1977, by a U.S.-Japan joint party. Two of the speeimens were found on the Mt. Baldr Glaeier of the upper Wright Valley, Dry Valleys, and nine were eollected from the plateau side of Allan Nunatak 100 km north of Mt. Baldr. These meteorites were named Mt. Baldr and Allan Nunatak meteorites, respeetively, and were designated as Mr. Baldr No. 1 and No. 2, and Allan Nunatak No. 1 to No. 9 in order of diseovery. They amounted to about 460 kg in total weight. Allan Nunatak No. 9, 407 kg in weight, is the largest meteorite ever found in Antaretiea. Preliminary classification revealed that one speeimen is an iron meteorite, one is an aehondrite and the other nine are ehondrites belonging to various petrologieal types. Some details of the field work and eolleetion are described, suggesting possible discovery of more meteorites in these areas. (Auth.)

E-19920

Nagata, T., **Possible mechanism of concentration of meteorites within the meteorite ice field in Antarctica,** *Tokyo. National Institute of Polar Research. Memoirs.* Feb. 1978 Special issue No.8, p.70-92, 19 refs.

991 pieees of meteorites of various kinds have been eolleeted from a bare iee field (now named the "Meteorite Iee Field") near the Yamato Mountains. Among these meteorites, 2 are irons and 1 is a stony-iron, while all the others are chondrites or aehondrites, in which 5 pieees of earbonaeeous ehondrite are ineluded. The differential mass distribution speetrum of these stony metcorites is in agreement with the theoretieally expeeted result for small asteroidal bodies based on the fragmentation model theory. An interpretation that all the meteorites are due to one or several meteorite showers ean be rejected because their meteoritie charaeteristies are broadly dispersed. The most plausible interpretation is that a large number of meteorites falling over the Antaretie interior during a long period of time have been transported by the iee sheet movements whieh result in a horizontal eonvergenee and an upwell of ice flow owing to the bedroek topography. Another necessary eondition is the exposure of meteorites on the blue iee surfaee eaused by the ablation effect. Semi-quantitative examinations of eaeh process involved seem to justify the above-mentioned hypothesis. Results of the examinations are outlined. (Auth. mod.)

E-19922

Shima, M., Yabuki, H., Yoshikawa, K., **Study on the extraterrestrial materials in Antarctica (VIII). On the distribution of the Yamato meteorites,** *Tokyo. National Institute of Polar Research. Memoirs,* Feb. 1978 Special issue No.8, p.101-109, 19 refs.

No definite explanation has been given yet to the distribution of about 1000 meteorite fragments found in the vieinity of the Yamato Mountains, Antaretiea. A discussion was given based on the assumption that meteorite showers fell in the vieinity, but it was found difficult to explain the observed distribution even if we assume the fall of as many as five different meteorite showers in the field. It seems that iee sheet movement has also eontributed to the present distribution. (Auth.)

E-19923

Yanai, K., Miyamoto, M., Takeda, H., **Classification for the Yamato-74 chondrites based on the chemical compositions of their olivines and pyroxenes,** *Tokyo. National Institute of Polar Research. Memoirs,* Feb. 1978 Special issue No.8, p.110-120, 5 refs.

Eleetron microprobe studies have been made of olivines and pyroxenes in thirty-three Yamato ehondrites eolleeted in Antaretiea in 1974, together with two chondrites eollected in 1975 and two Mt. Baldr chondrites. The small fragments used for the analyses were so ehipped from the meteorites that eontamination to the original materials is minimal. On the basis of histograms of iron eontents of olivines and orthopyroxenes, the following chondrites have been identified: 4 unequilibrated ehondrites: 8 H type, 2 L type and 1 LL type moderately equilibrated ones; and 12 H type, 9 L type and 1 LL type equilibrated ehondrite. Absenee of the E type ehondrite and predominance of the H type ones are notable features but may not be significant at this stage of identification. (Auth.)

E-19924

Yagi, K., Lovering, J.F., Shima, M., Okada, A., **Mineralogical and petrographical studies of the Yamato meteorites, Yamato-7301(j), -7305(k), -7308(l) and -7303(m) from Antarctica,** *Tokyo. National Institute of Polar Research. Memoirs,* Feb. 1978 Special issue No.8, p.121-141, 23 refs.

In 1973, the 14th Japanese Antaretie Research Expedition party eolleeted twelve meteorite stones in the bare iee field near the Yamato Mountains. Four of the stones were named Yamato-7301, -7305, -7308 and -7303. Yamato-7301, -7305 and -7303 are ordinary chondrites and are elassified respeetively as H4, L5 and L5 ehondrites, while Yamato-7308 is a howardite. Yamato-7301, -7305 and -7303 are eomposed ehiefly of olivine and orthopyroxene, with subordinate amounts of elinopyroxene, plagioclase and phosphate minerals. Opaque minerals, nickel-iron, troilite and chromite, are more abundant in Yamato-7301 than in Yamato-7305 and -7303. Yamato-7308 is composed mainly of pyroxene and plagioclase (anorthite), with olivine, silica minerals, opague minerals and glassy material in minor amounts. The eomposition of orthopyroxene is variable, and also elinopyroxene varies considerably in composition. The result suggests that Yamato-7308 originated from the fraetional erystallization of the parent magma of the aehondrite. (Auth.)

E-19925

Yabuki, H., Yagi, K., Onuma, K., **Petrological studies of Yamato-74 meteorites (1),** *Tokyo. National Institute of Polar Research. Memoirs,* Feb. 1978 Special issue No.8, p.142-155, 7 refs.

Chemical and petrologic classification of seven Yamato-74 meteorites was investigated in terms of mieroseopie observations and the

X-ray powder method. Yamato-74013 meteorite belongs to calcium-poor achondrite, diogenite with a granoblastic texture. The other six meteorites are ordinary chondrites. Recrystallization is fairly advanced in the chondrites, except in Yamato-74191 meteorite which contains glassy material and clinohypersthene. The composition of olivine and orthopyroxene and petrographic observation indicate that Yamato-74014, -74080, -74094, -74191, -74362, and -74459 meteorites belong to H5, L6, H6, L3, L6 and H6 types of chondrite according to the classification of Van Schumus and Wood (1967). (Auth.)

E-19926

Kimura, M., Yagi, K., Oba, Y., **Petrological studies of Yamato-74 meteorites (2),** *Tokyo. National Institute of Polar Research. Memoirs,* Feb. 1978 Special issue No.8, p.156-169, 8 refs.

Six Yamato meteorites collected in 1974 in Antarctica are petrographically investigated. All of them are ordinary chondrites, recrystallized and shocked to various extent. From the texture and the chemical composition of olivine and orthopyroxene, Yamato-74079, -74155, -74190, -74371, -74418 and -74647 meteorites are classified respectively as H5, H4, L6, H5, H6 and H5 of Van Schumus and Wood (1967). Difference in recrystallization of the matrices and the mineralogy is noticed between meteorites belonging to different petrologic types. (Auth.)

E-19927

Takeda, H., Miyamoto, M., Yanai, K., Haramura, H., **Preliminary mineralogical examination of the Yamato-74 achondrites,** *Tokyo. National Institute of Polar Research. Memoirs,* Feb. 1978 Special issue No.8, p.170-184, 22 refs.

Seven diogenites, two eucritic polymict breccias and one pallasite have been identified in the Yamato-74 meteorites by the electron microprobe and single crystal X-ray diffraction techniques. The textures of Yamato-74010, -74011, -74013, -74037, -74097, -74136 and -74648 are unlike those of the other diogenites. They are not brecciated and texturally the pyroxene seems to have recrystallized to a granoblastic texture with small change in mineral composition. The chemistry and textures of these diogenites are the same as those of the Yamato-6902 (b) diogenite previously reported. They may represent fragments of the same fall. Yamato-74159 is a polymict breccia which contains mineral and lithic clasts common to eucrites. The Yamato-74450 eucrite shows a variolitic texture, indicating a rapid solidification near the surface of its parent body. A brecciated part containing a pigeonite crystal with augite lamellae is also found in small amounts. The pyroxene trends of Yamato-74450 resemble those of the Pasamonte eucrite. The Yamato-74044 pallasite is the only stony-iron meteorite among the Yamato collection. A preliminary examination of the Yamato-75 meteorites identified one iron-rich diogenite and two eucritic polymict breccias. Yamato-75032 is the most Fe-rich of any known diogenite. (Auth.)

E-19928

Miyamoto, M., Takeda, H., Yanai, K., **Yamato achondrite polymict breccias,** *Tokyo. National Institute of Polar Research. Memoirs,* Feb. 1978 Special issue No.8, p.185-197, 27 refs.

Electron microprobe studies have been made of pyroxenes from Yamato-7307 and Yamato-74159. Both meteorites show the brecciated texture. Yamato-7307 was identified as howardite previously. It contains pyroxenes similar to those of diogenites and eucrites. However, Yamato-74159 contains various pyroxenes, calcic plagioclase, and other minerals and lithic clasts of only eucritic affinity. Within the thin section examined, no diogenetic pyroxene was found. Therefore, Yamato-74159 may best be described as a eucrite polymict breccia. These two meteorites can be explained by the surface brecciation process of a proposed layered crust model on an achondrite parent body. (Auth.)

E-19929

Takaoka, N., Nagao, K., **Rare gas studies of Yamato-7301(j), -7304(m) and -7305(k),** *Tokyo. National Institute of Polar Research. Memoirs,* Feb. 1978 Special issue No.8, p.198-208, 34 refs.

Yamato-7301 (H4 chondrite) and Yamato-7304 and -7305 (both L5 chondrites) were investigated for concentrations and isotopic compositions of rare gases. From the isotopic data cosmic-ray exposure ages on cosmogenic He-3, Ne-21 and Ar-38 and gas-retention ages on radiogenic He-4 and Ar-40 were calculated. Partial loss of helium was suggested for three samples. Xe-129 excesses and systematic enrichment in the light isotopes of xenon were observed in all three meteorites. Isotopic anomalies were observed in the heavy isotopes of xenon in Yamato-7304, and the excess pattern resembles the fission yield pattern of Pu-244. (Auth. mod.)

E-19930

Nishizumi, K., Imamura, M., Honda, M., **Cosmic ray induced Mn-53 in Yamato-7301(j), -7305(k) and -7304(m) meteorites,** *Tokyo. National Institute of Polar Research. Memoirs,* Feb. 1978 Special issue No.8, p.209-219, 36 refs.

Cosmic ray-induced long-lived nuclide, Mn-53 ($t1/2 = 3{,}700{,}000$ y) has been determined by the neutron activation analysis in Yamato-7301(j), -7305(k), and -7304(m) meteorites, and the contents were found to be 102, 357, and 417, dpm Mn-53/kg Fe respectively. The content found in Yamato-7304 is in basic agreement with other chondrites, and the slightly lower value in Yamto-7305, which is also common in others, may be due to some minor effects. In contrast, the content of Mn-53 in Yamato-7301 is lower than that of any other stone meteorites of relatively long exposure age so far studied. Several possible mechanisms are discussed to explain the puzzling Mn-53 activity in Yamato-7301: 1) Long terrestrial age of about 7 m.y., and the decay of Mn-53. 2) Heavy pre-atmospheric shielding of more than 70 cm, and low production rate of Mn-53. 3) Multistage irradiation history, and undersaturation of Mn-53. 4) A combined mechanism of the above two or three factors. (Auth.)

E-19931

Onuma, N., Clayton, R.N., Mayeda, T.K., Yanai, K., **Oxygen isotopes in several Yamato meteorites,** *Tokyo. National Institute of Polar Research. Memoirs,* Feb. 1978 Special issue No.8, p.220-224, 16 refs.

Oxygen isotopic compositions (O-18/O-16 and O-17/O-16) of five Yamato meteorites have revealed that Yamato-7303(m), -74190, -74191, and -7308(1), -74013 can be classified as L ordinary chondrites and differentiated meteorites, respectively. The former three meteorites may have been derived from one parent body, and the latter two from another parent body in the solar system. (Auth.)

E-19932

Kamaguchi, A., Okano, J., **K-Ar age of Yamato meteorite, Yamato-74190-01(L),** *Tokyo. National Institute of Polar Research. Memoirs,* Feb. 1978 Special issue No.8, p.225-228, 5 refs.

Preliminary measurements have been carried out on the isotopic compositions and contents of helium, neon and argon in Yamato-74190-01(L). K-Ar age and exposure ages on the meteorite have been calculated as follows: K-Ar age (approx 2.1 b.y.), exposure ages (24 and 22 m.y. in terms of He-3 and Ne-21 contents, respectively). From the isotopic correlation diagram for neon and the isotopic ratio, Ar-36/Ar-38, it has been suggested that this meteorite contains almost the same quantity of trapped rare gases as cosmogenic ones. (Auth.)

E-19933

Masuda, A., Tanaka, T., **REE, Ba, Sr and Rb in the Yamato meteorites, with special reference to Yamato-691(a), -692(b) and -693(c),** *Tokyo. National Institute of Polar Research. Memoirs.* Feb. 1978 Special issue No.8, p.229-232, 10 refs.

Following the previous analyses (Matsuda et al., 1977; E-18539) of Yamato-7301(j), -7305(k) and -7304(m) meteorites for REE, Ba, Sr and Rb, three other meteorites, Yamato-691(a), -692(b) and -693(c) were studied for the same elements, employing the stable isotope dilution. These three meteorites are enstatite chondrite, Ca-poor hypersthene achondrite and Type III carbonaceous chondrites (Nagata, 1975). (Auth.)

E-19934

Nagata, T., **Supplementary notes on the magnetic classification of stony meteorites,** *Tokyo. National Institute of Polar Research. Memoirs,* Feb. 1978 Special issue No.8, p.233-239, 2 refs.

A magnetic classification of stony meteorites on the basis of their saturation magnetization and their major magnetic transition temperature in the cooling process is revised by making use of recently reported chemical and petrographic data. The average values of enstatite chondrites (E), bronzite chondrites (H), hypersthene chondrites (L), carbonaceous chondrites (C) and achondrites (aC) are given as (48.0, 764), (30.9, 653), (12.5, 656), (9.7, 562) and (0.3, 788), respectively. Stony meteorites can be classified reasonably well on the described magnetic classification diagram. (Auth. mod.)

E-19935

Nagata, T., **Magnetic properties of an iron meteorite (Yamato-75031) and a pallasite (Yamato-74044),** *Tokyo. National Institute of Polar Research. Memoirs,* Feb. 1978 Special issue No.8, p.240-247, 2 refs.

The thermomagnetic curve of the matrix phase of Yamato-75031 (iron meteorite) reveals that the major constituent is 15% Ni plessite and the minor one is 8% Ni kamacite, which correspond respectively to the alpha-phase of matrix plessite and the Widmanstätten kamacite plates. The thermomagnetic curve of the metal part matrix of Yamato-74044 (pallasite) shows that the major constituent is 6.6% Ni kamacite. The matrix of both samples contains the taenite phase of about 30% Ni in weight. (Auth.)

E-19936

Fisher, R.M., Spangler, C.E., Jr., Nagata, T., **Metallographic properties of Yamato iron meteorite, Yamato-75031, and stony-iron meteorite, Yamato-74044,** *Tokyo. National Institute of Polar Research. Memoirs.* Feb. 1978 Special issue No.8, p.248-259, 7 refs.

Chemical and metallographic examination of Yamato iron meteorite, Yamato-75031, has revealed that the major elements in the iron base are 15.3%Ni, 1%P, and 0.76%Co. Very large Fe-Ni phosphides (schreibersite) are enveloped with swathing kamacite, and very fine phosphides are also encased in Widmanstätten kamacite plates within a plessite matrix. The composition and microstructure are quite similar to Piñon which is classified as an anomalous high nickel ataxite. Some annealing of the plessite occurred during entry into the earth's atmosphere. Chemical and metallographic examination of Yamato stony-iron meteorite, Yamato-74044, has revealed that the major elements in the metal phase are 11%Ni, 0.1%P, 0.75%Co with adjacent pools of manganese-rich olivine veined with iron sulphide. The olivine component and the nickel content classify this stony iron as a pallasite. The nickel contents of the taenite and plessite indicate chemical equilibrium during cooling to 400C. These samples, along with Yamato-75105, weighing from 20-60 grams, are smaller than any other iron or stony-iron meteorites. (Auth.)

E-19937

Fisher, R.M., Goldstein, J.I., Nagata, T., **Note on new antarctic iron meteorites,** *Tokyo. National Institute of Polar Research. Memoirs.* Feb. 1978 Special issue No.8, p.260-263, 3 refs.

Metallographic properties of newly recovered iron meteorites from Antarctica (Yamato-74044(Pallasite), Yamato-75031, Yamato-75105 and Allan Nunatak No.2) are very briefly summarized in tabular form. (Auth.)

E-19938

Yanai, K., Haramura, H., **Yamat-74662 meteorite: a carbonaceous chondrite Type II,** *Tokyo. National Institute of Polar Research. Memoirs.* Feb. 1978 Special issue No.8, p.264-267.

Preliminary chemical analysis of Yamato-74662 meteorite suggests that this meteorite belongs to carbonaceous chondrite Type II. No other meteorites of this type have been found among Antarctic meteorites which run to about one thousand. Yamato-74662 meteorite was collected from the surface of bare ice in the Meteorite Ice Field near the southern Yamato Mountains on Dec. 30, 1974. Data on the bulk chemical composition of Yamato-74662 meteorite in weight % are presented. (Auth. mod.)

E-19939

Elliot, D.H., Zinsmeister, W.J., Hall, S.A., **Biostratigraphy of Seymour Island, Antarctica,** *Nature,* Feb. 9, 1978 271(5645), p.586, Includes Reply by S. A. Hall. 4 refs.

The authors suggest that the paper by Hall on Cretaceous and Tertiary dinoflagellates from Seymour I. (1977; E-18367) contains misleading information. In particular, the stratigraphic columns do not represent the known field relations, the postulated early Senonian age for the ammonite-dated strata seems to be in conflict with the data, and an Eocene age for the so-called Miocene beds was suggested by previous authors. Hall states that he had already stressed the uncertainty of his correlations, agrees that his age assignment of early Senonian to the ammonite matrix was unwarranted, and contends that he gave full credit for his conclusions of an Eocene age for the dinoflagellate beds to the previous proponents of this interpretation.

E-19972

Sharbatian, A.A., Shumskiĭ, P.A., **Evolution of the earth's cryosphere** [K evoliutsii kriosfery zemli], Problemy paleogidrologii, Moscow, Nauka, 1976, p.143-160, In Russian. Refs. p.159-160.

DLC QE501.4.P3P75

The concept of the cryosphere is examined. Its origin and evolution are discussed and the value of the most conservative element of the cryosphere, the cryolithozones, of long standing, such as Greenland and the Antarctic, as an aid to dating is established on the basis of quantitative experiments. The possibility of using data on the present-day state of the cryolithosphere to reconstruct paleocryological conditions is investigated.

E-19981

Mudrey, M.G., Jr., McGinnis, L.D., Treves, S.B., **Summary of field activities of the Dry Valley Drilling Project 1972-1973 and 1973-1974,** Environmental impact in Antarctica, edited by B.C. Parker, Blacksburg, Virginia Polytechnic Institute and State University, 1978, p.179-210, 22 refs.

Following descriptions of the scope and progress of the Dry Valley Drilling Project, Phase III logistics and drilling operations carried out during the austral field season Sep. 1973 to Feb. 1974 are described. Drilling was done at the following sites: Ross I., Lake

Vanda, Don Juan Pond, Lake Vida, Lake Fryxell, and New Harbor. The first three phases of DVDP have been successfully completed. Although the field operations are phasing down and scientific results to date are meager, greater scientific returns are expected as the laboratory evaluation of the cores proceeds. Phase IV (1974-75) envisions the completion of DVDP field operations and the recovery of ocean sediments in McMurdo Sound.

E-19988

Burckle, L.H., Clarke, D.B., Shackleton, N.J., **Isochronous last-abundant-appearance datum (LAAD) of the diatom *Hemidiscus karstenii* in the sub-Antarctic,** *Geology,* Apr. 1978 6(4), p.243-246, 16 refs.

The last-abundant-appearance datum (LAAD) of the diatom *Hemidiscus karstenii* occurs in the upper part of oxygen-isotope stage 7 in the sub-Antarctic region of the Pacific and Indian Oceans. Strong fluctuations in abundance of this species below the datum level and the strong correlation between abundance peaks and radiolarian-derived sea-surface temperatures strongly suggest that this datum level is not an extinction. Rather it is an abrupt isochronous drop in abundance. It is suggested that this species may have become extinct during isotopic stage 6 when its abundances were low or that it retreated to some local niche where it persists to the present. (Auth.)

E-19989

Winn, R.D., Jr., **Upper Mesozoic flysch of Tierra del Fuego and South Georgia Island: a sedimentologic approach to lithosphere plate restoration,** *Geological Society of America. Bulletin,* Apr. 1978 89(4), p.533-547, Refs. p.545-547.

The South Georgia I. segment of the North Scotia Ridge is interpreted as having once been adjacent to Tierra del Fuego, South America. In this paper the Dalziel-Elliot reconstruction is investigated by testing correlation of the Mesozoic flyschlike units and determining their genesis. The study demonstrates that field-oriented sedimentologic studies can be used to decipher complex lithosphere plate motions. Moreover, pre-Jurassic plate movements can be determined only by sedimentologic and other field-oriented investigations.

E-19997

Hunter, W.C., **Petrography and petrology of a basanitoid flow from Hut Point Peninsula, Antarctica,** DeKalb, Northern Illinois University, Aug. 1974, 91p., M.S. thesis. Refs. p.65-78.

Basaltic rocks of the Hut Point Peninsula, Ross Island, Antarctica, are a part of a linear trend of volcanic occurrences which parallel the Transantarctic Mountains for 2000 km. Structural relations suggest the tensional nature of the region, a feature also indicated by the abundance of volcanic occurrences. The basanitoid (silica-undersaturated, alkali-rich olivine basalt lacking phenocrystal nepheline but with greater than 5% normative nepheline) of this study is of interest because it carries an abundant suite of ultramafic inclusions and therefore provides a look at upper mantle mechanisms of generation and transport of basaltic magmas. The objectives of the study include: 1) mapping and determination of the extent of the Twin Crater-Helo Pad flow and its field relations to other volcanic units of the immediate area; 2) microscopic analysis of the basanitoid of this flow; 3) determination of lateral and vertical variation within the flow; 4) comparison of the basanitoid of the Twin Crater-Helo Pad flow with other basanitoids of the area; and 5) development of a petrogenetic model.

E-19998

Brady, H.T., **Late Neogene diatom biostratigraphy and paleoecology of the dry valleys and McMurdo Sound, Antarctica,** DeKalb, Northern Illinois University, Aug. 1977, 172p., M.S. thesis. Refs. p.162-172.

Freshwater and marine diatom zones exist in the Dry Valley Drilling Project Holes drilled in Taylor Valley (DVDP 10 and 11), Wright Valley (DVDP 4A) and McMurdo Sound (DVDP 15). These diatoms reflect *in situ* marine, *in situ* lacustrine and reworked glacial sediments. Freshwater diatoms exist in fluvial and lacustrine conditions in the dry valleys and in meltwater pools on the McMurdo Ice Shelf. This flora (termed the *Navicula muticopsis* flora) evolved in the Pleistocene, and its migration into Southern Victoria Land stemmed from its development on ablating ice sheets on the Ross continental shelf; birds have probably added other cosmopolitan elements to the flora. Diatom paleoecology and biostratigraphy indicates that McMurdo Sound experienced lacustrine conditions at least once in pre-Wisconsin time. During the Pleistocene floating and grounded ice sheets invaded Taylor Valley forming freshwater lakes. The earlier invasions of the Ross Ice Sheet alternative floated and grounded in Taylor Valley, but the most recent two invasions were completely grounded. The early Pliocene sediments in Taylor Valley are *in situ* marine and are dated by diatom biostratigraphy as early Gilbert, near the Miocene/Pliocene boundary. The presence of Miocene diatoms in Wright Valley suggests that the main axial glaciations that formed Wright and adjacent dry valleys were mid-Miocene or earlier events.

E-19999

Osby, D.R., **Paleohydrology of Taylor Valley, Antarctica inferred from pore ice in permafrost core,** DeKalb, Northern Illinois University, Dec. 1977, 89p., M.S. thesis. Refs. p.52-57.

During the Antarctic field season of 1974-75 approximately 675 m of permafrost core was recovered by the Dry Valley Drilling Project (DVDP) from three boreholes in Taylor Valley: New Harbor (10), Commonwealth Glacier (11), and Lake Leon (12). In 1976, 134 samples of frozen core, taken at 5 m intervals, were shipped from the Antarctic core storage facility at Tallahassee, Florida, to Northern Illinois University. The cores from DVDP 10, 11, and 12 were allowed to thaw and interstitial waters were extracted with a hydraulic squeezer from portions of the samples. Salinities and resistivities were measured on splits of the samples. In addition to measurements on samples, down-hole gamma-ray logs were compiled from data collected during the 1976-77 field season. Results show that the gamma-ray logs are good lithologic indicators. The hydraulic records formulated by the compilation of geophysical, paleontological, and lithological data indicate that there have been marked differences in the hydrologic histories of the three study sites. These differences are integrally related to the advances and retreats of the Ross Ice Shelf and Taylor Glacier, and the rise and fall of sea level. (Auth. mod.)

E-20000

Wrenn, J.H.W., **Cenozoic subsurface micropaleontology and geology of eastern Taylor Valley, Antarctica,** DeKalb, Northern Illinois University, May 1977, 255p., M.S. thesis. Refs. p.173-186.

Micropaleontological study of drill cores recovered from Taylor Valley by the Dry Valley Drilling Project indicates that three biostratigraphic zones, separated by two major hiatuses, are present. Each zone is distinguished by faunas, age and depositional environment. Chapters I, II and III present an overall introduction to the history, physiography, and geology of the McMurdo Sound area. Drill core logs are presented in chapter IV. Chapter V presents the first biostratigraphic zonation proposed for the Cenozoic of East Antarctica. Interpretations of the Late Cenozoic geologic events in the McMurdo Sound area are presented in chapter VI, and chapter VII suggests areas for future research.

E-20008

Chappell, J., Thom, B.G., **Termination of last interglacial episode and the Wilson Antarctic surge hypothesis,** *Nature,* Apr. 27, 1978 272(5656), p.809-810, 16 refs.

Wilson's theory that Pleistocene glaciations might be initiated by massive surges of the East Antarctic ice sheet has been supported on climatology grounds by other authors. If a surge occurred, sea level would rise rapidly by many meters; the oceans would cool significantly, especially the Atlantic, followed by a quick falling of sea level as northern continental ice sheets developed. An alternative surge hypothesis for glacial initiation invokes rapid disintegration of the West Antarctic iee sheet causing a sea-level rise, perhaps as rapid but smaller in magnitude than Wilson's surge, followed by a change in deep Atlantic circulation and mild warming. Evidence is presented of sea-level changes and temperature variation that argues against the Wilson hypothesis but does not preclude alternative surge hypotheses.

E-20009

Gordon, J.E., Birnie, R.V., Timmis, R., **Major rockfall and debris slide on the Lyell Glacier, South Georgia,** *Arctic and alpine research.* Feb. 1978 10(1), p.49-60, Numerous refs.

A major rockfall occurred near the summit of Paulsen Peak (1877 m) and initiated a slide of rock, firn, and ice debris 4 km down the Lyell Glacier, South Georgia, through a total vertical height of approximately 1630 m. From a seismic record it is calculated that the average velocity of the rockfall and slide was 60 km/h. The excessive travel distance of the slide is explained by a grain flow mechanism in a fluid medium of suspended particles. Large quantities of windborne dust were deposited over 110 sq km downwind. By comparison of the slide volume with that of supraglacial debris elsewhere on the glacier, it is estimated that the rockfall represents a minimum of 93 years' "normal" subaerial erosion. Similar high-magnitude, low-frequency processes could play an important role in cirque formation. The distribution of the slide debris is not related to direct glacier transport, and its extensive spread some 2 km beyond the equilibrium line may influence the mass balance of the glacier. (Auth.)

E-20015

Nilsen, T.H., Bartow, J.A., Stump, E., Link, M.H., **New occurrences of dish structure in the stratigraphic record,** *Journal of sedimentary petrology.* Sep. 1977 47(3), p.1299-1304, 28 refs.

Several new occurrences of dish structure are documented herein: (1) Precambrian hornfels in the central Transantarctic Mountains. Antarctica; (2) Precambrian deltaic siltites of the Belt Supergroup in northern Idaho; (3) Oligocene turbidite sandstone recovered in a DSDP core from a small ridge located southeast of Jan Mayen Ridge in the Norwegian-Greenland Sea; (4) Oligocene fluvial deposits in the Caliente Range, California; and (5) Pliocene lacustrine deposits in the Ridge Basin, California. (Auth.)

E-20048

Yanai, K., **Yamato meteorites sampling** [Inseki o hirotta hanashi], *Polar news (Kyokuchi).* July 1975 No.21, p.2-11, In Japanese.

A Japanese team set out to investigate the meteorites between Showa Station and the Yamato Mountains. The logistics of the traverse are discussed in some detail. A total of 659 meteorites were found on this trip; earlier studies in the same area had recovered others. They were all from 10 to 30 cm in diameter and weighed 3 to 4 kg. Two hypotheses for the widely scattered pattern of so many small meteorites are offered: either they are the result of a meteorite shower or they are the fragments of large meteorites broken down by weathering.

E-20050

Suwa, K., **Geology of the Dufek intrusion in Antarctica** [Dufek gantai no chikyu kagaku], *Polar news (Kyokuchi).* Jan. 1975 No.21, p.21-30, In Japanese. 7 refs.

The Dufek intrusion is comprised of the Dufek Massif and the Forrestal Range. Combined thickness of both intrusions is estimated at 6-7 km, and exposed mafic rocks eover an area of approximately 8,000 sq km. The history of exploration of Dufek intrusion its age and the characteristics of surrounding areas, general morphology, inner structure and chemical properties, parental magma composition, feldspathic layers and transitional relationship between strata of gabbro, granophyre and siliceous rocks are discussed. Questions requiring further study are suggested.

E-20066

Takeda, H., Miyamoto, M., **Inverted pigeonites from lunar breccia 76255 and pyroxene-crystallization trends in lunar and achondritic crusts,** Lunar Science Conference, 8th, Houston, Texas, March 14-18, 1977. Proceedings. Volume 2. Petrogenetic studies of mare and highland rocks, New York, Pergamon Press, 1977, p.2617-2626, 28 refs.

DLC QB581.L755 1977

Single crystal X-ray diffraction studies and electron microprobe analyses of pyroxenes in breccia 76255 have indicated that they are inverted pigeonites with exsolution lamellae of augite about 15 microm thick and developed in a primary pigeonite with (001) in common. The host orthopyroxene contains blebby augite inclusions similar to those found in the most magnesian eucrite, Binda. The orientation of orthopyroxenes with respect to the (001) augite differs from grain to grain in 76255 but retains some geometrical relationships. A simple computer simulation of the growth rates of lamellae in this pyroxene suggests that the observed texture was developed at a depth of a few kilometers in the lunar crust. Exsolution textures of some cumulate eucrites are estimated to be produced at greater depth. The Yamato 75032 achondrite contains the most iron-rich diogenitic orthopyroxene with Fe/(Mg + Fe) close to that of Binda. These pyroxenes delineate the crystallization trend in an achondrite crust, which is simpler than that of the lunar trends. (Auth.)

E-20070

Geological Society of America, **Cordilleran Section 70th annual meeting,** *Geological Society of America. Abstracts with programs.* Feb. 1974 6(3), 324p.

This document contains the program and abstracts of papers presented at the 70th annual meeting of the Cordilleran Section of the Geological Society of America and its associated organizations. Abstracts of papers pertinent to the Antarctic appear on pp. 141, 182, 203, and 282.

E-20071

Geological Society of America, **1974 annual meetings,** *Geological Society of America. Abstracts with programs.* Oct. 1974 6(7), 530p., Abstracts.

This issuc contains the program and abstracts of papers presented at the 87th annual meeting of the Geological Society of America and its affiliates. Abstraets of papers pertinent to the Antarctic are on pp. 710, 759, 811, 812, 817, 821, 850, 880, and 1037.

E-20084

Mae, S., **Bedrock topography deduced from multiple radar echoes observed in the Mizuho Plateau, East Antarctica,** *Antarctic record.* Mar. 1978 No.61, p.23-31, 12 refs.

Taking into account the effect of spatial fading and erroneous echoes caused by large scale undulations of bedrock surface, the radar echo data by the 14th Japanese Antarctic Research Expedition were reanalyzed to obtain the ice thickness and bedrock topography in the Mizuho Plateau area. The bedrock topographies along three routes are drawn. Even though slopes on the bedrock were smoothed, there remain some steep ones which satisfy the eondition of the existence of a sub-ice water lake. Since it was expected from the data of surface

velocity measurements along one route that basal sliding was taking place in the ice sheet to the north, it is probable that there exists a sub-ice water lake. (Auth.)

E-20090

Clarkson, P.D., Brook, M., **Age and position of the Ellsworth Mountains crustal fragment, Antarctica,** *Nature*, Feb.17, 1977 265(5595), p.615-616, 11 refs.

K-Ar age determinations on two gneisses from Haag Nunataks (formerly Mount Haag) are presented. Assuming that these nunataks are an upfaulted slice of the metamorphic basement underlying the Ellsworth Mountains, it is suggested that the area was originally along the western margin of the Antarctic plate. (Auth.)

E-20106

Kumai, M., Anderson, D.M., Ugolini, F.C., **Antarctic soil studies using a scanning electron microscope,** International Conference on Permafrost, 3rd, Edmonton, Alberta, Canada, July 10-13, 1978. Proceedings. Vol.1, Ottawa, National Research Council of Canada, 1978, p.106-112, With Russian and French summaries. 12 refs.

The textures of morainic soils from southern Victoria Land were investigated, using a scanning electron microscope fitted with an energy dispersive X-ray analyzer. Electron micrographs of soil grains from lower Wright Valley showed sharp edges and smooth surfaces, indicating a low degree of mechanical and chemical weathering. The soil grains were 11% quartz and 4% magnetite. Chlorides were found on 7% of the soil grains. By contrast, electron micrographs of soil grains from the Beacon Valley showed rounded grains indicating a high degree of mechanical and chemical weathering. The soil grains were 20% quartz. Rhombohedral crystals CaSO4 were found on 60% of the soil grains. Chlorides were found on 30% of the soil grains. Because of the high degree of weathering, it was concluded that the morainic soils from the Beacon Valley are much older than those of the lower Wright Valley.

E-20134

Gunner, J., **Anatectic origin of late orogenic granitic intrusions of the Hope and Ida groups in the Beardmore Glacier area, Antarctica** [Anatekticheskoe proiskhozhdenie pozdneorogennykh granitov plutonov Khoup i Ida v raĭone lednika Birdmor, Antarktida], Mezhdunarodnyĭ geokhimicheskiĭ kongress, I, Moskva, 20-25 iiulia 1971, T.3, kn.2 (International Congress on Geochemistry, 1st, Moscow, July 20-25, 1971, Vol.3, Bk.2), Moscow, Akademiia nauk SSSR, 1972, p.118-130, In Russian.

DLC QE514.I57 1971

Strontium isotope studies were done on granitic intrusions from the central portion of the Transantarctic Mountains. Age and type of formation are set forth in a table. Granites of Hope and Ida Mountains are comagmatic. The magmas from which the intrusions formed crystallized at the same time, about 475 m.y. ago, but are characterized by different strontium isotope ratios.

E-20137

Ciesielski, P.F., Sliter, W.V., Wind, F.H., Wise, S.W., Jr., **Paleoenvironmental analysis and correlation of a Cretaceous *Islas Orcadas* core from the Falkland Plateau, Southwest Atlantic,** *Marine micropaleontology*, Mar. 1977 2(1), p.27-34, 8 refs.

DSI, QE719.M338

A comparison of Campanian-Maestrichtian cores from two localities on opposite sides of the Maurice Ewing Bank, at the eastern end of the east-west trending Falkland Plateau, reveals a significant change in faunal and floral assemblage characteristics across the Plateau. These changes are probably temperature dependent, and indicate that the Plateau served as an important barrier between water masses in the South Atlantic during late Cretaceous times. (Auth.)

E-20141

Jenkins, R.J.F., **New giant penguin from the Eocene of Australia,** *Palaeontology*, Sept. 1974 17(2), p.291-310, Refs. p.308-310.

DSI 560.542.P15

Pachydyptes simpsoni sp. nov., a giant fossil penguin, is described from fragmentary remains found at two levels in the Upper Eocene, Blanche Point Marls, South Australia. The remains from the lowest level immediately predate the first appearance of the index coccolith *Isthmolithus recurvus* Deflandre and are among the oldest well-dated penguin bones known. Comparison with the large modern penguin *Aptenodytes fosteri* Grey suggests that the fossil species probably stood about 140 cm tall. The need for precise stratigraphic data in analyzing the paleoecology of fossil penguins is emphasized, and so far as is possible, *P. simpsoni* and other Eocene fossil penguins are placed in a context of biostratigraphic, biogeographic, and paleoclimatic data. This suggests that the Eocene penguins from Australasia lived in seas with surface water temperatures of about 12-16C. They are interpreted as recording northward penetration of antarctic populations, perhaps to a paleolatitude of 45S.

E-20142

Shergold, J.H., Cooper, R.A., Mackinnon, D.I., Yochelson, E.L., **Late Cambrian Brachiopoda, Mollusca, and Trilobita from northern Victoria Land, Antarctica,** *Palaeontology*, May 1976 19(2), p.247-291, Refs. p.286-291.

DSI 560.542.P15

The discovery of late Cambrian fossils in the Bowers Group of Northern Victoria Land provides the first reliable evidence for the age of basement sedimentary rocks in the region. Together with a previously reported fauna of generally similar over-all composition and age, from the Heritage Range of the Ellsworth Mountains on the opposite side of the continent, they are the only late Cambrian fossils known in Antarctica and the youngest yet reported from the pre-Devonian basement. Seventeen taxa of trilobites (including representatives of *Pseudagnostus, Stigmatoa, Pedinocephalus, Prochuangia,* and *Proceratopyge*), four of molluscs (*Contitheca webersi*, sp. nov., *Hyolithes, Pelagiella, Scaevogyra*), and three of brachiopods (*Schizambon reticulatus*, sp. nov., *Billingsella, Prototreta*) are described; they represent a single fauna of late Idamean (*Erixanium sentum* Zone; late Dresbachian, late Tuorian) age. The fauna bears affinity with faunas of Australia, China, and Kazakhstan, in agreement with affinities indicated by previously described early and middle Cambrian trilobite faunas of Antarctica. (Auth.)

E-20144

Symposium on Andean and Antarctic volcanology problems, Santiago, Chile, Sep. 1974, Gonzales Ferran, O., ed, **Proceedings,** Naples, Italy, Francesco Giannini & Figli, 1976, 765p., Refs.

DGS 220 In8ss

This proceedings contains forty-seven papers, fifteen of which pertain to antarctic volcanology. For papers on this topic see E-14550 through E-14561, E-17870, and E-20145 through E-20149.

E-20145

Moreno Roa, H., **Upper Cenozoic volcanism in the Andes of southern Chile (from 40 deg 00 min to 41 deg 30 min S.L.),** Symposium on Andean and Antarctic volcanology problems, Santiago, Chile, Sep. 1974. Proceedings. Edited by O. Gonzales Ferran, Naples, Italy, Francesco Giannini & Figli, 1976, p.143-171, Refs. p.169-171.

DGS 220 In8ss

The purpose of this work is to describe the Andean Upper Cenozoic volcanism, its petrological features, and the probable depth of magma origin, together with a comparison with other volcanic regions of the Chilean Andes and the Shetland Islands of Antarctica. The region is characterized by the development of a large scale volcanism since late Pliocene up to the Present. A significant change was found in the alkali content of volcanic rocks from north to south. K2O increases notably towards the north, while Na2O slightly decreases. Southern Andean and Shetland Islands' volcanic rocks have a rich anomalous Na2O content.

E-20146

Verwoerd, W.J., Erlank, A.J., Kable, E.J.D., **Geology and geochemistry of Bouvet Island,** Symposium on Andean and Antarctic volcanology problems, Santiago, Chile, Sep. 1974. Proceedings. Edited by O. Gonzales Ferran, Naples, Italy, Francesco Giannini & Figli, 1976, p.203-237, Refs. p.234-237.

DGS 220 In8ss

Bouvet, the southernmost island on the Mid-Atlantic Ridge, is an ice-covered stratovolcano with a central crater or caldera. Marine erosion has considerably denuded it in the west, and the crater is breached in the north. Fumarolic activity is present, but the previously reported eruption of trachytic lava during 1955-1957 is in doubt. The coastal platform that came into being at this time is mainly ascribed to an avalanche. Flow features in rhyolite and "push-up veins" of obsidian are described from an offshore islet (Larsöya). Thirteen new analyses are given of lavas, including five from localities not sampled before. They fall naturally in four groups, designated as hawaiite, mugearite, benmoreite and trachytic soda rhyolite, and are representative of a mildly alkaline to transitional suite.

E-20147

Barker, P.F., **Tectonic framework of Cenozoic volcanism in the Scotia Sea region—a review,** Symposium on Andean and Antarctic volcanology problems, Santiago, Chile, Sep. 1974. Proceedings. Edited by O. Gonzales Ferran, Naples, Italy, Francesco Giannini & Figli, 1976, p.330-346, Refs. p.343-346.

DGS 220 In8ss

The extent to which the nature of Cenozoic volcanic activity around the Scotia Sea may be predicted from what is known of plate boundaries and motions is reviewed. The South Sandwich Is. volcanism conforms with the extreme youth of the eastward-moving Sandwich Plate on which it lies. Three successive plate regimes are considered to have affected the Pacific margin of southern South America and West Antarctica. In the Paleogene fast subduction was widespread, but by 20-30 Ma, had become restricted to that region opposite the South Shetland Is. (but with slow subduction likely at the South American margin). Even this stopped 4 Ma. ago, but possibly not before the trough of Bransfield Strait had started to open, a process continuing today with volcanism on Deception and Bridgeman I. and probably, below sea level, along a line connecting these two on the trough axis. The Pliocene to Recent activity on the east coast of Antarctic Peninsula is considered to be essentially an intra-plate phenomenon, similar to that in Marie Byrd Land and Victoria Land. (Auth.)

E-20148

Fuenzalida Ponce, R., **Magellan Fault Zone,** Symposium on Andean and Antarctic volcanology problems, Santiago, Chile, Sep. 1974. Proceedings. Edited by O. Gonzales Ferran, Naples, Italy, Francesco Giannini & Figli, 1976, p.373-391, 40 refs.

DGS 220 In8ss

The existence of the Magellan Fault Zone, as a probable active transform fault, is suggested by the seismicity of the last 30 years and geological and morphological evidence. Focal mechanism solutions of two earthquakes within the fault trace give a left lateral strike slip solution which agrees with apparent geologic offsets. Disintegration of the continental connection between the Patagonian Andes and the Antarctandes, and subsequent bending of the orogens, is largely explained by rotation of the orogen along transform faults, but plastic deformation is important as well. Geological evidence suggests an age of 80 m. y. for the beginning of the disintegration. The distribution of seismicity between the American and Antarctic plates in the Scotia Sea suggests that the motion between these plates is being absorbed along the boundaries of the Scotia Miniplate, which is defined by the Magellan Fault Zone—North Scotia Ridge, South Sandwich Arc, South Scotia Ridge and Shackleton Fracture Zone. The volcanic activity in the Southern Andes, Scotia Arc and Antarctic Peninsula is briefly analyzed in terms of the tectonic framework.

E-20149

LeMasurier, W.E., Wade, F.A., **Volcanic history in Marie Byrd Land: implications with regard to Southern Hemisphere tectonic reconstructions,** Symposium on Andean and Antarctic volcanology problems, Santiago, Chile, Sep. 1974. Proceedings. Edited by O. Gonzales Ferran, Naples, Italy, Francesco Giannini & Figli, 1976, p.398-424, Refs. p.421-424.

DGS 220 In8ss

The record of volcanism in Marie Byrd Land begins with rocks approximately 100 million years old. Mesozoic volcanic rocks consist predominantly of calc-alkaline dacitic and rhyolitic ash flow tuffs and lava domes with initial Sr-87/Sr-86 ratios around 0.706 and 0.707. Cenozoic volcanism, on the other hand, has been characterized by eruptions of nepheline normative alkali basalt, apparently from relatively decentralized vents, and by construction of central-type volcanoes composed mainly of peralkaline trachytic rocks. The Mesozoic volcanic rocks are similar to the calc-alkaline lavas that have erupted around the rift valley provinces such as East Africa. The geochemical characteristics of volcanism suggest that, in Mesozoic time, coastal Marie Byrd lay near a converging plate margin with associated subduction zone. Sometime in the early Cenozoic this environment changed to one of crustal extension and continental fragmentation that was most likely related to the evolution of sea floor spreading across the Pacific-Antarctic Ridge. This environment apparently persists to the present day, as suggested by Holocene ash layers in Antarctic ice cores. The tectonic displacements implied by oceanographic data and the volcanic record suggest a pre-Cenozoic reconstruction involving East Antarctica, Marie Byrd Land and New Zealand that resembles the geological relationships and volcanic evolution found in the western cordillera of the United States. (Auth.)

E-20156

Grosval'd, M.G., **Last glaciation of the Ross Sea, Antarctica** [Poslednee oledenenie moria Rossa (Antarktika)], *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia.* 1977 Vol.31, p.19-30, In Russian with English summary. 27 refs.

Glacial history of the Ross Sea is discussed from the data obtained in recent geologic and geomorphologic studies carried out in the Transantarctic Mountains, McMurdo Sound, and Terra Nova Bay areas and in the Beaufort and Franklin islands. The glaciation began in Miocene. In Pleistocene the West Antarctic ice sheet repeatedly advanced upon the continental shelf of the sea. The last glaciation, termed "Ross I," also covered the whole sea. According to indirect evidence the West Antarctic Ice Sheet was disintegrating during interglacial intervals, which was predated by the collapse of the Ross Sea ice sheet. The present Ross Ice Shelf is an unstable transitional formation between the continental ice sheet and non-glaciated sea.

E-20164

Jones, L.M., Faure, G., **Study of strontium isotopes in lakes and surficial deposits of the ice-free valleys, Southern Victoria Land, Antarctica,** *Chemical geology,* Apr. 1978 22(2), p.107-120, Refs. p.117-120.

The ice-free valleys of southern Victoria Land, Antarctica, contain saline lakes including Lake Vanda in Wright Valley and Lake Bonney in Taylor Valley. The source of the salts dissolved in the brines has not yet been identified. Strontium in water-soluble salts of soil samples in Wright Valley has Sr-87/Sr-86 ratios very similar to the ratio of brines in Lake Vanda but significantly different from the ratios of seawater and basaltic rocks of the McMurdo Volcanics. The Sr in Lake Vanda, therefore, could not have originated from seawater or from volcanic rocks of the area, but may have been derived by chemical weathering of the igneous and metamorphic rocks exposed in Wright Valley. The evidence from this and similar studies in other parts of the world indicates that the Sr-87/Sr-86 ratios of saline brines in closed continental basins are representative of the Sr in the rocks underlying the basin. The Sr in carbonate and sulfate minerals precipitated from such brines preserves the ratios that existed at the time of deposition. Because of these relationships, we suggest that stratigraphic variations of the strontium isotope ratios of non-marine carbonate or sulfate rocks reflect changes in the geology of the drainage basin. The isotopic composition of Sr of such rocks may therefore provide useful information about the geologic histories of continental basins. (Auth. mod.)

E-20175

McKelvey, B.C., Webb, P.N., Kohn, B.P., **Stratigraphy of the Taylor and lower Victoria groups (Beacon Supergroup) between the MacKay Glacier and Boomerang Range, Antarctica,** *New Zealand journal of geology and geophysics,* 1977 20(5), p.813-863, Refs. p.855-858.

The stratigraphy of the Taylor and basal Victoria Groups exposed over an area of 3500 sq km between the Boomerang Range and MacKay Glacier of southern Victoria Land is described, based upon data from 65 measured sections. The Taylor Group is of Devonian or older age and is at least 1400 m thick. It rests nonconformably, via the peneplained Kukri Erosion Surface, upon a crystalline basement complex of Ordovician and older rocks. The Taylor Group, composed largely of terrestrial quartzose sandstones, consists of the New Mountain Sandstone at the base, overlain by the Altar Mountain Formation, Arena Sandstone, Beacon Heights Orthoquartzite, and the Aztec Siltsone. The Terra Cotta Siltstone member of the New Mountain Sandstone, the Altar Mountain Formation, and the Aztec Siltstone contain cyclic red bed sequences. The New Mountain Sandstone is separated from the rest of the Taylor Group by the south and southwest trending Heimdall Erosion Surface. The diversity of the lower part of the Taylor Group contrasts with the homogeneous and broadly equivalent Hatherton Sandstone and Alexandra Formation of the Beacon Supergroup elsewhere, suggesting paleogeographically distinct basins of sedimentation. The Permian to Triassic Victoria Group disconformably overlies the Taylor Group via the glacigene Maya Erosion Surface. Within the Victoria Group the basal Metschel Tillite is separated from the overlying Weller Coal Measures by the Pyramid Erosion Surface, which, in many localities, has completely eroded the Metschel Tillite and cut down through the older Maya Erosion Surface. (Auth.)

E-20176

Thomson, M.R.A., **Annotated bibliography of the paleontology of lesser Antarctica and the Scotia Ridge,** *New Zealand journal of geology and geophysics,* 1977 20(5), p.865-904, Refs.

The bibliography lists 166 references on the paleontology of lesser Antarctica and the Scotia Ridge. It aims to identify all the paleontological discoveries made and to list all the major works on the subject. It is selective to the extent that many review papers are omitted if they add nothing new to previous literature. Conversely, essentially non-paleontological papers are noted if they contain an important item of paleontological data or comment. It runs from 1833 to 1975 and is presented in two parts: a list of papers in author order with a summary of each and a complete list of the species described, and a systematic index further subdivided by stratigraphical age. (Auth.)

E-20177

Piper, D.J.W., Pe, G.G., **Cenozoic clay mineralogy from D.S.D.P. holes on the continental margin of the Australia-New Zealand sector of Antarctica,** *New Zealand journal of geology and geophysics,* 1977 20(5), p.905-917, 22 refs.

The sources of clay minerals from Antarctica have been studied by comparing clay content of turbidites, contour current deposits, and pelagic sediments from three Deep Sea Drilling Project continental margin holes. In the Oligocene and Miocene, illite and some chlorite were supplied from Wilkes Land; and illite, high-iron chlorite, and montmorillonite from Victoria Land. Increase in kaolinite and montmorillonite in the Plio-Quaternary off Wilkes Land is related to glacial erosion and subsequent reworking of lowest Tertiary continental shelf strata that accumulated under warm climatic conditions. (Auth.)

E-20178

Shaw, J., Healy, T.R., **Formation of the Labyrinth, Wright Valley, Antarctica,** *New Zealand journal of geology and geophysics,* 1977 20(5), p.933-947, 12 refs.

Previous hypotheses to explain the origin of the Labyrinth have invoked floods, glacial erosion, and uniformitarian arguments of salt weathering and deflation. The landscape is one of reticulate troughs, deeper to the east than west, with irregular long profiles and enclosed depressions. The troughs are shown to belong to a hierarchy and display curvilinear form. Their origin is related to glacial plucking along joints and subsequent deepening by ice-marginal and proglacial meltwater systems. Periglacial alteration of the primary form, particularly asymmetric infill by solifluction and scree, is largely a result of debris supplied by freeze-thaw processes. Intertrough blocks initially formed upstanding masses between reticulate, joint-controlled depressions, and were subject to subglacial abrasion by a glacier sliding over its bed. The required wet-based ice conditions imply either extremely thick ice or a warmer climate than present. Landform is used to deduce a complex origin for the Labyrinth with a sequence of events including glacial erosion, meltwater excavation, and alteration by weathering and deflation under periglacial conditions. A Pliocene or earlier origin is proposed. (Auth.)

E-20179

Selby, M.J., **Transverse erosional marks on ventifacts from Antarctica,** *New Zealand journal of geology and geophysics,* 1977 20(5), p.949-969, 34 refs.

The conclusions derived by J. R. L. Allen from studies of bedform development in flume experiments on erosion of weak beds have been applied to transverse erosional marks found on ventifacts in the McMurdo Oasis. The antarctic bedforms are closely analogous with those produced in the flume experiments. Marks may be distinguished from weathering pits by using length/depth and width/depth ratios as discriminatory indices. Exceptionally large marks are found to be attributable to the high lifting capacity of cold, dense air, and hence large particles available for abrasion. A defective bed model of mark initiation is supported. Parabolic erosional marks are particularly reliable indicators of paleowind directions. (Auth.)

E-20180
Keys, J.R., Anderton, P.W., Kyle, P.R., **Tephra and debris layers in the Skelton Névé and Kempe Glacier, south Victoria Land, Antarctica,** *New Zealand journal of geology and geophysics,* 1977 20(5), p.971-1002, Refs. p.998-1002.

Basanite tephra layers have been found in glacier ice at several places on the Skelton Névé and Kempe Glacier, South Victoria Land. They are coarse to fine, moderately well to poorly sorted, mainly essential vitric to vitric crystal ash, similar to that produced in strombolian (or hawaiian) eruptions. They were probably erupted from a cinder cone or cones located between the Koettlitz Glacier and the Royal Society Range. Grain size analysis of the ice enclosing the tephras suggests that deposition occurred between 1,000 and 10,000 years ago. Other dirt layers in these areas are composed of local rock material such as dolerite and Beacon Supergroup debris. They sometimes contain tephra as well. Such layers were formed after wind deposition. (Auth.)

E-20181
Grew, E.S., **Precambrian basement at Molodezhnaya Station, East Antarctica,** *Geological Society of America. Bulletin,* June 1978 89(6), p.801-813, 43 refs.

The Precambrian basement exposed around Molodezhnaya Station in western Enderby Land consists largely of well-layered, in part migmatitic, gneisses and of plutonic gneisses. The most abundant rock types in the well-layered gneisses are pyroxene gneiss, hornblende gneiss, garnet-biotite gneiss, garnet-pyroxene gneiss, and quartzo-feldspathic gneiss. The plutonic gneisses crop out in three bodies, each of a different rock type: charnockitic, granodioritic, and enderbitic. Field relations show that the charnockitic gneiss locally cuts the compositional layering in the well-layered gneisses and that it was emplaced prior to granulite-facies metamorphism and folding. Total-rock Rb-Sr and U-Th-Pb ages are calculated. The geochronologic data are consistent with the following sequence of events: (1) Formation of the well-layered gneisses, possibly 2,000 m.y. ago. (2) Plutonism, granulite-facies metamorphism, and folding, 1,000 m.y. ago. (3) Dikes of granite and pegmatite, amphibolite-facies metamorphism, and faulting, 500 to 550 m.y. ago. (4) Secondary mineralization, possibly 400 to 500 m.y. ago. The event 1,000 m.y. ago appears to have been important in this part of Antarctica, and some Antarctic charnockites may have been emplaced at that time. (Auth. mod.)

E-20182
Davies, G.F., **Roles of boundary friction, basal shear stress and deep mantle convection in plate tectonics,** *Geophysical research letters,* Mar. 1978 5(3), p.161-164, 23 refs.

A set of forces on the lithospheric plates, including a driving basal shear stress, is deduced and found to be plausibly consistent with the possibility that large-scale, whole-mantle convection cells contribute significantly to driving the plates. Frictional and driving plate boundary forces, including forces on the Antarctic plate, are estimated, and a basal shear stress (BS) is assumed to complete the force balance on each plate. Boundary frictional stresses are assumed to be large (of the order of kilobars), as suggested by Hanks (1977). All BS stresses of significant magnitude are roughly aligned with plate motions. The BS is the only available driving force for the South American and Eurasian plates, and is probably significant in driving most other plates. More generally, the results demonstrate that force models are possible which differ substantially from previous models. (Auth. mod.)

E-20188
Antarctic Meteorite Working Group, **Antarctic meteorite newsletter, Vol.1, No.1,** Houston, Tex., NASA Johnson Space Center, June 1978, 14p.

This is the first issue of a series which will be published at about 2-5 mo intervals and contain basic processing and initial survey information that has been collected on meteorites up to the date of issue. This issue contains an introduction, information on processing and curation of antarctic meteorites, the requirements and procedures for requesting meteorite samples, three meteorite data sheets, a white paper entitled "A plan for the collection, processing, and distribution of the U.S. portion of the antarctic meteorites collected during 1977-78," and the membership of the Meteorite Working Group and the Meteorite Steering Group. The white paper and the membership lists appear as Appendices 1 and 2. The paper defines the philosophy behind the curation scheme, spells out in broad terms the program for curation, and details the responsibilities of each institution.

E-20201
Craddock, C., **Antarctica and Gondwanaland,** Polar research: to the present, and the future, edited by M.A. McWhinnie, Boulder, Colo., Westview Press, 1978, p.63-96, Refs. p.89-96.

This paper examines the geology of Antarctica as a test of Du Toit's Gondwanaland hypothesis, traces the origin, tectonic evolution, and fragmentation of Gondwanaland, and discusses the results of deep sea drilling operations in the Southeast Pacific Basin to clarify the geologic history of the region. The geologic data from Antarctica largely confirm Du Toit's predictions. Striking geologic similarities between Antarctica and the other southern lands, and the new evidence from the oceans for sea-floor spreading combine to provide a strong case for the reality of Gondwanaland.

E-20226
Omoto, K., **Geomorphic development of the Showa Coast, East Antarctica. Chronological interpretation of raised beaches based on levelings and radiocarbon datings,** *Tohoku University. Science reports. Series 7 (Geography),* 1977 27(2), p.95-148, Refs. p.129-132.

In order to clarify the development of coastal landforms and to resolve the confusion over radiocarbon dates along the Showa Coast, the author surveyed raised beaches and step landforms in many sections and sampled for radiocarbon dating in the ice free areas along the Lützow-Holm Bay. He subsequently compiled a geomorphic development chronology based not only upon his own measurements or radiocarbon dates but also on those published in earlier reports. Included in the paper are a number of figures and 47 photos of the landforms in question.

E-20227
Yusa, Y., **Study on thermosolutal convection in saline lakes,** Lunar Science Conference, Houston, Texas, 1976. Proceedings, New York, Pergamon Press, 1976, p.149-183, Refs. p.182-183.

DLC QB592.L5 1976

Through heat balance and macroscopic thermal model studies of Lake Vanda in Victoria Land, Antarctica, based on thermal properties observed by the present author et al. in both the 1970-71 and the 1971-72 austral summers, it has been shown that the lake is balanced thermally with the solar radiation as well as other saline lakes in Victoria Land by considering the partly developed thermosolutal convection. In this paper, the phenomenon is more closely studied from the point of view of thermosolutal convection. The existing theory for thermosolutal convection based on temperature distribution involves some limits in interpreting the actual thermosolutal system. In place of temperature distribution, heat flow is introduced into the theory; from which is derived a new criterion concerning the onset and the development of thermosolutal convection. With this criterion one can distinguish the zone of thermosolutal convection from the zone under the control of the molecular process, which reasonably explains physical meanings of the step-like structure in temperature

and salinity profiles and of the apparent diffusivity throughout the structure zone of the latter. These results give reasonable bases to the unusually high water temperatures and to the general feature of the water temperature distribution appearing under the solar heating of saline waters with stable salinity gradients. Furthermore, it is shown that the oscillation of heat flow observed in Lake Vanda results from thermosolutal convection. It is also suggested that the thermosolutal structure in this lake may be maintained for a very long period for the future under the unchanged climatic condition. (Auth.)

E-20228

Takeda, H., Miyamoto, M., Ishii, T., Reid, A.M., **Characterization of crust formation on a parent body of achondrites and the moon by pyroxene crystallography and chemistry,** Lunar Science Conference, Houston, Texas, 1976. Proceedings, New York, Pergamon Press, 1976, p.3535-3548, Refs. p.3546-3548.

DLC QB592.L5 1976

Combined single-crystal X-ray diffraction and electron microprobe studies have been made of pyroxenes from lunar cataclastic norite (Civet Cat clast) 72255, pyroxene-rich clast 76015,4, anorthosite 60025,213, and meteorites including diogenites, eucrites, and the Yamato (l) howardite. The results are compared in terms of the lower stability limit of pigeonite. Unlike the lunar pyroxenes, the exsolution, decomposition, and inversion features in pyroxenes of the above genetically related achondrites show some unique sequential features which can be interpreted, together with their major- and trace-element chemistry and ages of formation, as a product of a single step differentiation of a thin crust formed on a parent body of achondrites early in the solar system's history. Pyroxenes in howardite, a polymict suface breccia formed on this body, can be interpreted to a first approximation as a mixture of diogenitic orthopyroxenes, Binda-like "inverted" pigeonites, and eucritic pigeonites. The CaO-MgO anticorrelation discussed by Jérome and Goles can be explained by a differentiation model and subsequent mechanical mixing of the differentiated products. (Auth.)

E-20236

Grikurov, G.E., **Geology of the Antarctic Peninsula,** New Delhi, Amerind Publishing Co., 1978, 140p., TT 76-52000, For Russian original see E-17590. Refs. p.131-140.

This book sets out the results of geologic studies of the Antarctic Peninsula and the adjacent islands up to 1972. A regional stratigraphic scheme has been evolved, and information on the geology and chemistry of igneous rock has been summarized and systematized. All the available geochronologic data have been collected and presented and their probable geologic interpretation analyzed. The structure of the area has been described, the stratigraphy defined, and the tectonics of the area zoned. Four stages of geologic history have been identified: Late Precambrian, Paleozoic, Mesozoic and Cenozoic. It is argued that the Antarctic Peninsula belongs to the Mesozoic fold region that evolved on the Late Precambrian folded basement and underwent extensive rifting in the Cenozoic. This was accompanied by partial regeneration of the continental crust into oceanic. The mineral resources potential of the region has been indicated. (Auth.)

E-20251

Geological field trip to the James Ross islands: GEOANTAR—the testimony of the rocks [Un operativo geológico en el grupo insular James Ross: GEOANTAR—el testimonio de las rocas], *Antártida*, June 1975 No.6, p.8-11, In Spanish.

An Argentine team carried out field work on Ross, Cockburn, Marambio and Snow Hill Islands in the 1974-75 season. The thrust of their effort was toward geochronology and paleontology; fossil plants and animals were found that shed light on the evolution of the antarctic continent and the time at which it separated from the South American landmass. When a hurricane destroyed their boat, the team fashioned a wooden replacement which broke all the rules of ship construction but nevertheless enabled them to finish their coastal studies.

E-20277

Baker, P.E., Buckley, F., Rex, D.C., **Cenozoic volcanism in the Antarctic,** *Royal Society of London. Philosophical transactions.* May 26, 1977 279B(963), p.131-142, 40 refs.

With the cessation of subduction along the western margin of Antarctica, Mesozoic calc-alkaline activity gradually gave way in the Cenozoic to more alkaline volcanism associated with an extensional regime. Calc-alkaline volcanism persisted well into the Tertiary in the South Shetland Islands and has started to develop in the Quaternary in the South Sandwich Islands, though most of the Pliocene-Recent products of this group are of island-arc tholeiitc affinity. The Cenozoic volcanic rocks of the Ross Sea and Marie Byrd provinces are generally highly undersaturated basanitoids, alkali basalts and phonolites. In contrast, those of the more northerly parts of the Antarctic Peninsula and its off-lying islands are for the most part mildly alkaline or transitional. However, Paulet Island, the youngest volcano on the northeast side of the Peninsula, is distinctly more alkalic than its Pliocene predecessors. Deception Island, distinctive on account of its strongly sodic differentiates, is probably connected with residual back-arc extension along Bransfield Strait. (Auth.)

E-20280

Sutton, J., **Antarctica, a key to the understanding of the evolution of Gondwanaland,** *Royal Society of London. Philosophical transactions.* May 26, 1977 279B(963), p.197-205, 25 refs.

The geological structure of Antarctica, regarded by du Toit as the keystone to Gondwanaland, is known to reflect earlier features, some dating from Precambrian times. Improved knowledge of the evolution of Antarctica has contributed to an understanding of the history of Gondwanaland as a whole, and to the still wider question of the development of continental crust generally over the last 600 million years. (Auth.)

E-20301

Yanai, K., Ishikawa, T., **Antarctic geological map series. Sheet 11 - Cape Hinode,** Tokyo, National Institute of Polar Research, Mar. 1978, 6p., Explanatory text, plates, and map.

Rocks exposed in the Cape Hinode area are classified and described. Plates of aerial photographs and of some of the more typical types of rocks are included.

E-20302

Shiraishi, K., Kizaki, K., Yoshida, M., Matsumoto, Y., **Antarctic geological map series. Sheet 17—Northern Yamato Mountains (1) Mt. Fukushima,** Tokyo, National Institute for Polar Research, Mar. 1978, 7p., Explanatory text, 2 plates and map. 10 refs.

The geology of Mt. Fukushima is discussed in the explanatory text accompanying the map. General geology, petrography of the region, radiometric age of area biotite, chemical composition of rocks exposed, and geologic structure are covered.

E-20309

Chinn, T.J., **Hydrology-glaciology programme in Antarctica,** *New Zealand antarctic record,* 1978 1(1), p.7-9.

Observations of river, lake and glacier fluctuations in the dry valleys since the 1969/70 summer season are briefly summarized.

The studies included the hydrology of the Onyx River, water levels of some eight enclosed lakes of the dry valleys, water levels, ice ablation and thickness measurements of Lake Vanda, and ice ablation and mass balance measurements on a number of glaciers.

E-20311
Cullen, M., **Mount Erebus,** *New Zealand antarctic record,* 1978 1(1), p.12.

Mount Erebus is one of only three volcanoes in the world with an active lava lake. Volcanological studies have incorporated seismological recordings, petrographic and chemical studies of the McMurdo volcanics, and the collection and mapping of saline deposits. Efforts to obtain lava samples from the inner crater have so far been unsuccessful, but considerable work has been done on the outer crater rim, including isotopic analysis of snow and ice layers and the mapping of warm ground areas.

E-20320
Findlay, R.H., **Provisional report on the geology of the region between the Renegar and Blue Glaciers, Antarctica,** *New Zealand antarctic record,* 1978 1(1), p.39-44, 11 refs.

Detailed geological investigations were carried out in the region between Renegar and Blue Glaciers 1) to establish lithostratigraphic and metamorphic correlations within the region and to attempt to extrapolate these correlations into the region of the Taylor Valley to the north and the Skelton Glacier to the south, and 2) to make a structural analysis of the region between the glaciers. The area studied is formed by the complexly folded metasediments of the Skelton Group intruded by numerous as yet undifferentiated granitic bodies. These granites and metasediments are overlain by late Carboniferous-Jurassic arkoses of the Beacon Supergroup intruded by the Jurassic Ferrar Dolerite. The structural geology, rock types, and metamorphism of the area are described. Provisional geological maps of the Walcott Bay and Salmon Hill regions of McMurdo Sound are reproduced.

E-20339
Klimov, L.V., **Geological structure of the western part of Enderby Land,** Seventh voyage of the R/V Ob',,1961-62, Jerusalem, Israel Program for Scientific Translations, 1968, p.152-165, TT 68-50312, For Russian original see 3E-4112.

Preliminary results are given of geological surveys conducted in 1962 in an area from 44 deg to 51 deg E and in 1963 to 54 deg E; a tentative geologic map of the region is included at a scale of 1:-1,000,000. The bedrock is complicated by crystalline rock of the East Antarctic platform, in which a Pre-Riphean metamorphic complex, Caledonian intrusions, and charnockites are distinguished. Younger intrusive formations are small, evidently Mesozoic, dolerite dikes. Metamorphic rocks of the region, represented by migmatized and granitized crystalline schists, are similar to the rocks of the East Antarctic platform. The stages of geological development of the area are outlined.

E-20340
Znachko-IAvorskiĭ, G.A., **Geological features of the western part of Enderby Land,** Seventh voyage of the R/V Ob',,1961-62, Jerusalem, Israel Program for Scientific Translations, 1968, p.166-174, TT 68-50312, For Russian original see 3E-4113. 2 refs.

Results are presented of geomorphological studies conducted in 1962 by ground and aerial surveys of a coastal strip from 15 to 120 km wide between 44 deg and 52 deg E. A map is included at a scale of 1:1,000,000. The western part, including the Alasheyev Bight area, is almost wholly ice-covered. West of 48 deg the region becomes mountainous. Some of the relief features are described. The large features are due to tectonic processes and prolonged platform development. Among the exogenic relief-forming factors are glaciers and their meltwater, the sea, and physical and chemical weathering. The two basic local relief categories of ice and rock are discussed.

E-20358
Purdy, G.M., Twichell, D.C., **Sediment distribution around the Bouvet triple junction,** *Marine geology,* July 1978 28(1/2), p.M53-M57, 4 refs.

Some features of the sediment distribution pattern and the seismic reflection profiles around the Bouvet triple junction in the South Atlantic Ocean are accounted for by bottom currents flowing northeastwards through the Bouvet fracture zone. (Auth.)

E-20359
Briskin, M., Schreiber, B.C., **Authigenic gypsum in marine sediments,** *Marine geology,* July 28, 1978 (1/2), p.37-49, 23 refs.

A detailed stratigraphic and quantitative study of Pleistocene Core V12-18, located on the Rio Grande Rise at a depth of 4021 m, has shown tabular gypsum crystals growing around fragments and enclosing planktonic foraminiferal tests. The crystals are particularly associated with high concentrations of solution-resistant benthonic and planktonic foraminifera. Their stratigraphic distribution and faunal association suggests that gypsum precipitation is intimately linked to episodic influx of Antarctic Bottom Water originating in the Weddell Sea. The oceanic regime occupying the core site provides the physical-chemical conditions necessary to produce the sulfate and calcium ionic concentration necessary to precipitate gypsum. During climatic amelioration, an influx of oxygen-rich, undersaturated Antarctic Bottom Water sweeps over the basin floor, actively dissolving the foraminiferal ooze and thus supplying the necessary ionic calcium. At this point gypsum is produced. (Auth. mod.)

E-20360
Glasby, G.P., **Deep-sea manganese nodules in the stratigraphic record: evidence from DSDP cores,** *Marine geology,* July 1978 28(1/2), p.51-64, Refs. p.62-64.

Examination of the core records of the first 370 holes of the Deep Sea Drilling Project (DSDP) reveals that manganese nodules are relatively uncommon in the stratigraphic column and that at least 42% of the nodules are from a restricted time period, the Pleistocene. It is suggested that manganese nodules have a more widespread occurrence at present than in the geological past and that the onset of high bottom current velocities approximately 3.5 million years ago, as suggested by Kennett and Watkins, has been a major influence in favouring nodule growth throughout much of the Pacific. Fossil manganese nodules from Timor formed during the Cretaceous when the present Antarctic circumpolar current was deflected north of Australia. (Auth.)

E-20361
Hendy, C.H., **Chronology of glacial sediments in the Taylor Valley,** New Zealand, University of Waikato, [1978], 4p., Unpublished manuscript.

A sequence of dates is presented for the deposition of lacustrine carbonate sediments in the Taylor Valley at Lacroix Glacier and in the core recovered from DVDP core 12. On the basis of the carbonate dates and oxygen isotope analysis a correlation can be made between the DVDP 12 sediments and those exposed elsewhere in the valley, and this can in part be extended to the glacial sequence outlined by Denton et al (1971). It is suggested that the Taylor Glacier reaches its maximum extension during interglacial periods probably as a result of thickening of the East Antarctic Ice Sheet behind the Transantarctic Mountains to the west.

E-20362

Dry Valley Drilling Project (DVDP) Seminar-III, June 5-10, 1978, *Dry Valley Drilling Project (DVDP). Bulletin,* May 1978 No.8, 125p., Refs.

The third DVDP seminar was hosted by the National Institute of Polar Research, Tokyo, Japan. This publication contains 45 abstracts of paper dealing, for the most part, with specific geochemical, geological, and geophysical DVDP studies. One paper discusses the project organization and accomplishments. For selected papers see E-20363, E-20365 through E-20373, E-20375, E-20376, F-20374, and L-20364, or 32-4377.

E-20363

Bodkin, J.B., Goldich, S.S., **Fluorine, chlorine, and sulfur in Cenozoic volcanic rocks of Ross Island and vicinity, Antarctica,** *Dry Valley Drilling Project (DVDP). Bulletin,* May 1978 No.8, p.1-3, 6 refs.

The average contents (ppm) of F, C1, and S in DVDP core samples and surface samples of the principal rock groups of the Cenozoic volcanics of Ross I. and vicinity are tabulated, together with averages of CO2. In the basanitoids and low-silica trachybasalts, F can be correlated with P205 and apatite is the principal host mineral. In these rocks and in the anorthoclase phonolites the F/C1 ratio ranges from 1.01 to 1.18. In the high-silica trachybasalts and mafic phonolites, amphibole is the host mineral, and the F/C1 ratio is reduced to the range from 0.70 to 0.26. S averages range from 70 to 483 ppm and are notably lower in the core samples. The variations of F and C1 with rock types reflect processes of magmatic differentiation. The implications of the data for the origin of the alkali-basalt magma are discussed.

E-20365

Goldich, S.S., Bodkin, J.B., Stuckless, J.S., Wamser, R.C., **Trace elements in volcanic rocks of Ross Island and vicinity, Antarctica, amd implications for the origin of alkali-basalt magma,** *Dry Valley Drilling Project (DVDP). Bulletin,* May 1978 No.8, p.16-20, 8 refs.

Major, minor, and trace elements have been determined in 49 samples of Cenozoic volcanic rocks from Ross I. and vicinity. Basanitoids and trachybasalts are represented in 17 core samples; phonolites and one trachyte in 32 surface samples. Comparative data for Ba, Rb, Sr, and Zr determined by various analytical methods and concentrations of trace elements in the principal rock groups are tabulated. The investigations confirm the conclusion arrived at by a number of investigators that the source of alkali-basalt magma is hydrous peridotitic mantle.

E-20366

Horiuchi, K., Torii, T., Murakami, Y., **Studies of the radium, uranium and thorium concentrations in DVDP cores of Wright Valley,** *Dry Valley Drilling Project (DVDP). Bulletin,* May 1978 No.8, p.22-28.

Ignition loss and Ra, U, and Th content were determined in the 10% HClO4-soluble fraction and Na2CO3-fusion fraction of DVDP 13 and 14 cores and four lake deposits in the Vestfold Hills. The determination methods are briefly described and the results tabulated.

E-20367

Kurasawa, H., **Geochemistry of Ferrar dolerite, dikes and Cenozoic volcanics of the dry valley region,** *Dry Valley Drilling Project (DVDP). Bulletin,* May 1978 No.8, p.34-38.

The geochemistry of the Ferrar dolerite sill from DVDP 13 (Don Juan Pond) suggests a genetic relationship and is compatible with a model of evolution by fractional crystallization processes. Samples of the Ferrar dolerite are characterized by high initial Sr-87/Sr-86 ratios which show no correlation with major or minor element chemistry. Contamination of the model by silicic crustal materials could explain the high Sr ratios. Variations in the Sr isotope ratios of the dolerite and the dykes show a correlation with Si02 content which can be readily explained by pre-intrusional contamination and redistribution of Rb. The Cenozoic volcanics of the dry valley region, which consist of trachybasalts, are characterized by high Sr-87/Sr-86 ratios, and high Rb and Sr.

E-20368

Kyle, P.R., **Geology and volcanic history of Hut Point Peninsula as inferred from DVDP 1, 3 and 3 drillcores,** *Dry Valley Drilling Project (DVDP). Bulletin,* May 1978 No.8, p.39-43.

DVDP 1 shows six main petrographic sequences: drill cores from DVDP 2 and 3, which are nearly identical, consist of four petrographic sequences. Tentative correlations between the cores are shown. The drill cores reveal a more complex geological history for Hut Point Peninsula than that inferred from surface mapping. At least three episodes of differentiation have resulted in eruptive sequences of lavas having intermediate compositions.

E-20369

Kyle, P.R., Sutter, J.F., Treves, S.B., **K/Ar age determinations on DVDP 1 and 2 core samples,** *Dry Valley Drilling Project (DVDP). Bulletin,* May 1978 No.8, p.46-48, 3 refs.

The average of four K/Ar age determinations made on samples from DVDP holes 1 and 2 is 1.26 m.y. The ages are in agreement with the paleomagnetic measurements of McMahon and Spall (1974;7L-14414) who showed the DVDP 1 and 2 cores to have reversed magnetic polarity, compatible with eruption during the Matuyama reversed epoch.

E-20370

Matsumoto, G., Torii, T., Hanya, T., **Organic constituents of antarctic lake waters and sediments of the McMurdo Sound region,** *Dry Valley Drilling Project (DVDP). Bulletin,* May 1978 No.8, p.50-53.

Analytical results are reported of geochemical studies carried out to elucidate the distribution of organic constituents in lake waters, sediments, and some related materials at Cape Royds, Ross Island and in Wright, Taylor, and Pearse valleys in the McMurdo Sound region. Total organic carbon (TOC) and organic carbon extractable with ethyl acetate (EOC) were determined, and the ethyl acetate extracts of waters, sediments, soils and epibenthic algae were analyzed for hydrocarbons, fatty acids, and phenolcarboxylic acids.

E-20371

McGinnis, L.D., Stuckless, J.S., Kyle, P.R., **Significance of gamma-ray, salinity and electrical logs in DVDP boreholes,** *Dry Valley Drilling Project (DVDP). Bulletin,* May 1978 No.8, p.54-59, 9 refs.

Gamma logs of Ross I. and dry valley boreholes, supplemented by laboratory measurements of radioelement contents of core samples, show that relative to rocks of similar SiO2 content, basement rocks of Ross I. are anomalously low in U and Th while the volcanic rocks are anomalously high in these elements and K. The anomalies are attributed to the radioelement abundance present at the time of crystallization. The tendency toward an increase in radioelement content with an increasing degree of alkalinity for any given SiO2 content is noted. Total salinity of pore water was determined in 5 holes in Taylor and Wright Valleys and in McMurdo Sound. Electrical resistivity measurements were made only in hole 13 at the Don Juan Pond. The resistivity log indicates that ground water in the Ferrar dolerite is less saline than that in the sands.

E-20372

Powell, R.D., **Sedimentation conditions in Taylor Valley, Antarctica, from DVDP cores,** *Dry Valley Drilling Project (DVDP). Bulletin,* May 1978 No.8, p.77-80.

Sedimentary processes that deposited the sediment in DVDP cores 8-12 are interpreted and described from grain size analyses of samples. The sediments are divided into six major types based on cumulative frequency curves and histograms of their grain size distributions.

E-20373

Stuckless, J.S., Goldich, S.S., Miesch, A.T., Weiblen, P.W., **Petrochemical model for the genesis of the volcanic rocks from Ross Island and vicinity, Antarctica,** *Dry Valley Drilling Project (DVDP). Bulletin,* May 1978 No.8, p.81-89, 16 refs.

Major and minor elemental, isotopic, petrographic, and field data for volcanic rocks, xenoliths, and minerals examined by Q-mode factor analysis show that the petrogenetic evolution of volcanic rocks of the Ross I. area was rather simple in gross aspects, although it was quite complex in detail. Q-mode factor analysis is a multivariate statistical method whereby the rock analyses are regarded as vectors in a space with dimensions equal to the number of analyzed elements. Projection of 49 sample vectors representing the Ross I. data from an original 15-dimensional space, for the 15 oxides used, into only 3 dimensions preserves 94 to 98 percent of the variance in the major oxides and 60 to 93 percent of the variance in the minor and trace elements. The 3-dimensional vector configuration is illustrated and discussed, together with a 3 end-member model based on basanitoids and another 3 end-member model based on trachybasalt and phonolite data.

E-20375

Weiblen, P.W., Hunter, W.C., Stuckless, J.S., Schulz, K.J., Mudrey, M.G., **Correlation of clinopyroxene composition with environment of formation based on data from Ross Island volcanic rocks,** *Dry Valley Drilling Project (DVDP). Bulletin,* May 1978 No.8, p.108-115, 19 refs.

Analyses of 56 clinopyroxenes from the Dry Valley Drilling Project core and surface samples of basanitoid, brachybasalt, and xenoliths provide data on the following clinopyroxene occurrences: 1) xenocrysts, 3) megacrysts, 3) zones of phenocrysts, and 4) groundmass pyroxenes. This classification is based on petrographic criteria of size, shape, color, and the presence or absence of features such as reaction rims and zoning. It has been shown that the compositional data for clinopyroxene vary with tectonic setting. Si, Al, Ti, Na, and Mn variations distinguish at least 90% of the clinopyroxene data for "within plate" alkali basalts from clinopyroxene data for basalts from other settings. The data presented in this paper define systematic trends on the MnO-TiO2-Na2O and SiO2-TiO2 diagrams. These trends are interpreted in light of the mode of clinopyroxene genesis inferred from the petrographic classification.

E-20376

Yusa, Y., **Analysis of thermosolutal phenomena observed in McMurdo saline lakes,** *Dry Valley Drilling Project (DVDP). Bulletin,* May 1978 No.8, p.120-123.

A model is presented for analysis of the heat balance and thermal structure of McMurdo saline lakes by the thermosolutal convection theory. The results indicate that thermosolutal convection develops in the upper part of Lake Vanda and in the deeper part of Lake Miers, while thermosolutal stratifications in the deeper part of Lakes Vanda and Bonney are stable where heat and salt are transported by the molecular process. The theory is also used to predict the development of an oscillating convection. Regarding thermosolutal structure in Lake Vanda, it is demonstrated that the thermosolutal criterion at each depth will change due to changes in the amount of solar heating and the salinity gradient.

E-20396

Kemp, E.M., Balme, B.E., Helby, R.J., Kyle, R.A., Playford, G., Price, P.L., **Carboniferous and Permian palynostratigraphy in Australia and Antarctica: a review,** *Australia, Bureau of Mineral Resources, Geology and Geophysics. BMR journal of Australian geology and geophysics,* 1977 No.2, p.177-208, Refs. p.204-208.

Continued research in late Palaeozoic palynological biostratigraphy in Australia since about 1970 permits the delineation of a series of informally defined palynostratigraphic units in both Western and eastern Australia. The units include both informal assemblage zones and taxon-range-zones. In eastern Australia, the palynostratigraphic schemes currently in use present modifications of the palynological "Stages" synthesised by Evans (1969). Subdivisions within these stages are based in most cases of the first appearances of individual form-species; two subdivisions have been described within both Stages 2 and 3, three within Stage 4, and four within Stage 5. Correlation of these new units with the assemblage units described from Western Australia is tentative at present. The subdivisions of Evans' scheme have been identified within, *inter alia,* the Bowen, Cooper, Galilee, Sydney, and Tasmania Basins. Recent studies in Antarctica have compared palynological assemblages from the central Transantarctic Mountains and south Victoria Land with eastern Australian palynofloras: Stages 2, 4, and 5 have been identified from these areas. Assemblages from the Prince Charles Mountains have been referred to Stage 5. (Auth. mod.)

E-20404

Cox, K.G., **Flood basalts, subduction and the break-up of Gondwanaland,** *Nature,* July 6, 1978 274(5666), p.47-49, 26 refs.

Investigations of orogeny along the Pacific margin of Gondwanaland show a close relationship in space and time between the varied tectonic and igneous phenomena of the Gondwanide orogeny and its foreland which implies a genetic connection between the flood basalts and the orogenic process. Hence, despite differences between the Gondwanaland foreland and the western Pacific backarc environment, a hypothesis that the flood basalts are related to subduction seems to be worthy of serious consideration.

E-20405

Campbell, I.B., Claridge, G.G.C., **Development and significance of polygenetic features in antarctic soils,** *New Zealand journal of geology and geophysics,* 1977 20(5), p.919-931, 18 refs.

Some examples of polygenetic processes in the formation of soils in Antarctica are outlined. Two main types of polygenetic soils are found. The first are formed by additions of parent material either at the surface through the retreat of re-advanced ice over pre-existing soil surfaces, or by the addition of unweathered detritus at the base of profiles through accelerated moraine ablation. The second are formed by the redistribution and mixing of soil material by cryoturbic processes. The examples of polygenetic processes described and their effects on soil development are, for the most part, localized, and are a result of possibly only small variations in local climatic or other conditions. Even on very ancient surfaces and on steep stable slopes there is little evidence of widespread pedogenetic discontinuity, and profiles appear to show the effects of cumulative weathering over prolonged periods of time. From the absence of evidence for extensive soil rejuvenation, it is inferred that there have been no major climatic fluctuations in Antarctica during Quaternary and Late Pleistocene times. (Auth.)

E-20407

Antarctic Meteorite Working Group, **Antarctic meteorite newsletter, Vol.1, No.2,** Houston, Tex., Johnson Space Center, NASA, Aug. 1978, 39p., Issued by the Antarctic Meteorite Working Group.

This issue contains data sheets for 33 antarctic meteorite samples. The data include sample, field, and contamination category number, sample weight, meteorite type, location, physical and petrographic descriptions, and other characteristics, where applicable. Details of the requirements and procedures for requesting meteorite samples are also given.

E-20409

Rona, P.A., Richardson, E.S., **Early Cenozoic global plate reorganization,** *Earth and planetary science letters,* June 1978 40(1), p.1-11, 65 refs.

Synthesis of regional plate movements reveals a major reorganization of global plate motion from Mesozoic to Cenozoic patterns that occurred primarily during the Eocene epoch (53.5 to37.5 m.y.B.P.). The reorganization involved reorientation of relative plate motions with large N-S components into large E-W components, continuation of pre-existing E-W sea floor spreading, initiation of new E-W spreading, deceleration of spreading rates and obduction of ophiolites. The reorganization is attributed to increase in resistance imposed on the global plate system by increase in length of E-W-trending collisional plate boundaries from 2500 to 28,500 km during the interval 55 to 40 m.y.B.P., forcing the system to reorient along lines of less resistance. The pattern of global plate motion resulting from the reorganization is constrained by the resistance imposed by 19,000 km of collisional plate boundaries. Plate motion events in the antarctic sectors of the Indian and South Pacific Ocean regions are considered. (Auth. mod.)

E-20410

Hintenberger, H., Jochum, K.P., Braun, O., Christ, P., Martin, W., **Antarctic meteorite Yamato 74123—a new ureilite,** *Earth and planetary science letters,* July 1978 40(2), p.187-193, 26 refs.

The rare gases He, Ne, Ar, Kr and Xe were measured in bulk samples of Yamato 74123. The He-3 and Ne-21 exposure ages are found to be 5.50 Ma and 2.83 Ma, respectively. In addition to the cosmogenic component the samples contain primordial rare gases of the fractionated type in amounts typical of ureilites. In a three-isotope plot neon turns out to be a mixture of planetary neon and cosmogenic neon. The elements Na, Mg, Al, Si, P, S, K, Ca, Cr, Mn, Fe, Co, and Ni have been determined by spark source mass spectrometry in Yamato 74123 and for comparison in the ureilites Haverö and Kenna. The chemical composition as well as the noble gas abundance pattern identify Yamato 74123 as an unreilite. (Auth.)

E-20412

Smith, V.R., **Soil chemistry of Marion Island (Subantarctic),** *South African journal of science,* May 1978 74(5), p.174-175, 9 refs.

This paper presents the major differences in soil chemical properties between black and grey lava and between coastal and inland sites on Marion Island's eastern coastal plain. Chemical parameters in the soils of three study sites are compared: organic C, soil pH, cation exchange capacity, cation saturation, and the ratio of exchangeable cations. The island soils have high organic C contents: coastal soils are more organic than inland black lava soils, which are more organic than grey lava soils. The mean cation saturation of coastal soils is greater than that of inland soils, and that of inland black lava soils is greater than that of grey lava soils. The relationships between cation exchange capacity and soil exchangeable cation content are demonstrated. The mean pH of coastal soils is significantly lower than that of inland soils, which do not differ significantly between black and grey lava areas. The chemical composition of the island plants reflects the influence of the sea on soil nutrient status.

E-20439

Yanai, K., **Search for meteorites** [Inseki tansa], *Polar news (Kyokuchi),* July 27, 1978 No.27, p.43-46, In Japanese.

Encouraged by the success of a U.S.-Japanese joint party for meteorite searching in 1976-77 in Victoria Land, the party working under the name "Antarctic Search for Meteorites" (ANSMET) revisited the same scene. The U.S. participants were William A. Cassidy, principal investigator, and Billy P. Glass. Japanese participants were the author and M. Funaki, both of the National Institute for Polar Research. The four scientists visited the Allan Hills, 230 km north of McMurdo Station, and made a thorough search on foot for meteorites in the area. A total of 311 new specimens were collected. They include 6 irons, 3 or 4 achondrites, 1 or 2 carbonaceous chondrites and chondrites of various petrological types and metamorphic grades.

E-20447

Levin, B.IU., **Under Antarctica's ice sheet—a meteorite crater** [Meteoritnyĭ krater pod ledianym pokrovom Antarktidy], *Zemlia i vselennaia,* May-June 1978 No.3, p.28-32, In Russian.

This article, intended for the general reader, sets forth the hypothesis that the large depression located by geophysical investigations near the coast of Antarctica facing Australia is in fact a meteorite crater deeply buried under the ice. Tektites from this meteor are alleged to have been found in Australia, the Philippine Islands, Indonesia, Indochina, and on the ocean bottom around these areas.

E-20513

Kovach, J., Faure, G., **Use of strontium isotopes to study mixing of sediment derived from different sources: the Ross Sea, Antarctica,** *U.S. Geological Survey. Open-file report,* 1978 No.78-701, International Conference, Geochronology, Cosmochronology, Isotope Geology, 4th, 1978, Aspen, Colorado. Short papers, p.230-232, 10 refs.

Cores taken from the Ross Sea were examined by the strontium-isotope method in order to study sediment composition. The cores penetrate from 3 to almost 5 meters of sediment consisting of pebbly mud presumably deposited by floating ice. Top sediments were mostly Holocene, underlain by Pliocene. Findings support other opinions that the sediments have a West Antarctic source.

E-20529

Meyerhoff, H.A., Meyerhoff, A.A., Johnson, B.D., Powell, C.M., Veevers, J.J., **Spreading history of the eastern Indian Ocean and India's northward flight from Antarctica and Australia: Discussion and reply,** *Geological Society of America. Bulletin,* Apr. 1978 89(4), p.637-640, Refs. p.638-640. Includes reply by Johnson, B.D., C.M. Powell, and J.J. Veevers.

This discussion by Meyerhoff et al refutes the contention by Johnson et al (1976; E-17583) that India has moved many thousands of kilometers from Antarctica and Australia to its present position. In support of their view Meyerhoff et al cite literature on the continuity of Precambrian-Cenozoic Stratigraphy and biostratigraphy across all of southern Asia, and the intertonguing of Gondwana and Tethys biotas and formations in northern India, and in parts of the Soviet Union and Tibet. Johnson et al contend that Meyerhoff et al's view that India has always been close to Asia is difficult to reconcile with existing paleomagnetic data, and that Meyerhoff et al ignore the evidence that shows the oceans to be much younger than the continents, so that continents now separated by oceans must have been joined at some earlier time.

E-20540

Blight, D.F., Oliver, R.L., **Metamorphic geology of the Windmill Island, Antarctica: a preliminary account,** *Geological Society of Australia. Journal,* Sep. 1977 24(5), p.239-262, 45 refs.

Rocks of the Windmill Islands, Antarctica, consist of a layered sequence of schists, gneisses, and migmatites intruded by a charnockite and a porphyritic granite, and cut by two swarms of easterly-trending dolerite dykes. The rocks have undergone four deformations. The metamorphic grade of the Windmill metamorphics ranges from (1) upper amphibolite facies (sillimanite-biotite-orthoclase) in the north, through (2) biotite-cordierite-almandine granulite to (3) hornblende-orthopyroxene-granulite in the south. Major-element rock chemistry suggests that the pre-metamorphic nature of the schists and gneisses probably consisted of acid and basic volcanics interbedded with sediments ranging from greywacke-type sandstones to shales. The abundances of the elements K, Rb, and Th are lower than those of terrains of similar grade elsewhere. This is regarded as reflecting original rock composition. The ratios K/Rb, Th/K, and K/(Rb/Sr), however, are comparable with those from similar terrains elsewhere where K, Rb, and Th enrichment by crustal fractionation has been suggested. This suggests that the Windmill metamorphics were not derived by retrogression from upper granulite-facies rocks.

E-20541

Adams, C.J., Cullen, D.J., **Potassium-argon ages of granites and metasediments from the Bounty Islands area, southwest Pacific Ocean,** *Royal Society of New Zealand. Journal,* June 1978 8(2), p.127-132, 21 refs.

Potassium-argon dating of granites and a biotite-hornfels from the vicinity of the Bounty Islands indicates emplacement in Early Jurassic times, in the interval between the Tuhuan (Devonian-Carboniferous) and Rangitata (Late Jurassic-Early Cretaceous) orogenies. Slight recrystallization of a typical Bounty Platform argilite is dated as Early Triassic, which is much younger than the metamorphic ages (300-450 m.y.) that characterize the Lower Palaeozoic Greenland and Waiuta groups of the South Island, New Zealand. The age of recrystallization of the Bounty Platform greywacke facies metasediments would thus seem to favor correlation with Permian to Lower Triassic sediments of the South Island, despite petrographic similarities to the Greenland and Waiuta rocks. (Auth.)

E-20542

Beggs, J.M., **Geology of the metamorphic basement and Late Cretaceous to Oligocene sedimentary sequence of Campbell Island, southwest Pacific Ocean,** *Royal Society of New Zealand. Journal,* June 1978 8(2), p.161-177, 31 refs.

A late Cretaceous to middle Oligocene sedimentary sequence, here named the Campbell Island Group, is exposed on Campbell Island in the core of a Miocene volcanic dome overlying metamorphic basement rocks of the Complex Point Group. The latter comprises low-grade schist which has undergone metamorphism of low to intermediate pressure type, and is very restricted in outcrop. The Campbell Island Group includes the late Cretaceous and Paleocene Garden Cove Formation, and the Eocene and Oligocene Tucker Cove Limestone. A marine transgression is recorded in the Garden Cove Formation, which includes non-marine sediments at the base and nearshore facies overlain by deep marine mudstone at the top. The Tucker Cove Limestone is a pelagic limestone which was anomalously lithified during diagenesis, apparently by high local heat flow associated with Miocene volcanism. Regional aspects of the geology of the Campbell Plateau are discussed. (Auth.)

E-20547

Zinsmeister, W.J., **Three new species of *Pulvinites* (Mollusca: Bivalvia) from Seymour Island (Antarctic Peninsula) and southern California,** *Journal of paleontology,* May 1978 52(3), p.565-569, 6 refs.

A new species of *Pulvinites, P. antarctica* from the Campanian of Seymour Island, Antarctic Peninsula and two new species, *P. californica* and *P. pacifica* from the Upper Paleocene of Simi Hills, Ventura County, California provide new data about the geologic range and paleobiogeographic distribution of the family Pulvinitidae. The discontinuous geologic range of the Pulvinitidae and significant morphologic differences of the members of the family suggest that the Pulvinitidae may represent a polyphyletic grouping of unrelated aberrant isognomonids with a foramen in the right valve. (Auth.)

E-20552

Keany, J., **Paleoclimatic trends in Early and Middle Pliocene deep-sea sediments of the Antarctic,** *Marine micropaleontology,* Mar. 1978 3(1), p.35-49, 49 refs.

Detailed micropaleontological investigation has established the distribution of major radiolarian assemblages in the Early to Middle Pliocene deep-sea sediments of the antarctic region, with particular emphasis on the Gilbert Reversed Magnetic Epoch (t = 5.18 to 3.32 m.y. B.P.). Inter-core correlations, based on paleomagnetic stratigraphy and detailed radiolarian biostratigraphy, has provided a chronological framework for a detailed paleoclimatic investigation of the Gilbert Epoch. A pronounced cooling trend is evident throughout the Gilbert Reversed Epoch, marked by the rapid succession of warm subantarctic, cool subantarctic and antarctic assemblages. The transition from a warm to a cold assemblage suggests a climatic deterioration occurring over a period of 1.6 m.y., significantly longer than the rapid climatic oscillations of the Pleistocene. Factor curves, produced by subjecting total faunal data to multivariate statistical analysis, have been interpreted in terms of paleoclimatic controls, resulting in a relative paleotemperature curve for the entire Gilbert Epoch. The maximum abundances of the antarctic assemblage in the Gilbert and Gauss occurs between 3.7 and 3.2 m.y. ago coinciding closely with the 3.5 m.y. age of the first reported Patagonian glaciation in southernmost South America. (Auth. mod.)

E-20561

Craddock, C., comp., National Research Council. Polar Research Board, **Earth science investigations in the United States Antarctic Research Program (USARP) for the period July 1, 1977 - June 30, 1978,** Washington, National Academy of Sciences, 1978, 61p., Numerous refs.

This is the tenth in a series of annual reports on work in the earth sciences carried out as part of USARP. The report summarizes research activities conducted during the year ending June 30, 1978. The summaries are arranged alphabetically by investigator, with affiliation, laboratory and field work, publications, and future programs given for each entry. Two tables of contents are provided; one arranged alphabetically by investigator, and the other by institution.

E-20563

Ramsay, A.T.S., ed, **Oceanic micropalaeontology,** London, Academic Press, 1977, 2v., Numerous refs. passim. For selected papers see E-20564 through E-20569.

DLC QE719.023

This compendium of papers, in two volumes, reviews present knowledge and recent developments in various aspects of oceanic micropaleontology. The volumes contain a total of eighteen chapters with general and taxonomic indexes. The information gleaned from such studies of the ocean is being utilized to improve existing schemes or develop new schemes of biostratigraphical zonation, and to investigate the climatic and oceanographic history of the Earth since the Mesozoic.

E-20564

Be, A.W.H., **Ecological, zoogeographic and taxonomic review of Recent planktonic foraminifera,** Oceanic micropaleontology, Vol.1. Edited by A.T.S. Ramsay, London, Academic Press, 1977, p.1-100, Refs. p.76-88.

DLC QE719.023, Vol.1

A classification of 37 Recent species of planktonic foraminifera is presented and illustrated. One new subspecies *Globorotalia menardii gibberula* is described. Microstructural differences between several species are discussed. Biological, physical-chemical, and artificial factors influence our understanding of the spatial and time-series distributions of living planktonic foraminifera. The distribution patterns of their death assemblages are largely controlled by variations in long-term productivity (over thousands of years), the selective dissolution of their tests on the sea-floor, scouring and redeposition by bottom currents, and upward mixing of sediments and test destruction by burrowing organisms. Recent planktonic foraminifera are grouped into five major faunal provinces. Many species occur in reciprocal latitudinal zones between the northern and southern hemispheres, and, hence, reflect bipolar and antitropical distribution patterns. Species diversity decreases from low to high latitudes. The distribution patterns of thirteen common species in surface sediments of the world's oceans are discussed. *Globoquadrina pachyderma* is the dominant species in antarctic surface sediments. *Globigerina bulloides* occurs predominantly in the subpolar regions. The distributions of these and other species in the Antarctic and Subantarctic are discussed.

E-20565

Ruddiman, W.F., **Investigations of Quaternary climate based on planktonic foraminifera,** Oceanic micropalaeontology, Vol.1. Edited by A.T.S. Ramsay, London, Academic Press, 1977, p.101-161, Refs. p.157-161.

DLC QE719.023, Vol.1

The achievable time resolution in any paleoclimatic reconstruction is primarily dependent upon the sedimentation rate relative to the sample size and the degree of sediment mixing by burrowing fauna. Among the sedimentological problems which interfere with the desired Quaternary climatic record are changes in surface water conditions at certain times, turbidities, solution, and the low sedimentation rates in the Arctic and much of the Antarctic. It is noted that solution, hiatuses, barren zones, and changes in sedimentation rates hamper antarctic paleoclimatic reconstructions despite the availability of numerous cores spanning the Quaternary. Recently, two approaches to foraminiferal paleoclimatology have achieved considerable success: 1) objective quantitative techniques using factor analysis and linear regression to reconstruct unbiased paleoestimates of sea-surface temperature and salinity; and 2) a regional approach to oceanic reconstruction, with cross-sections or areal maps revealing a full time-space sense of paleoceanographic change such as migrations of frontal boundaries and ecological water masses, rather than just down-core variations analyzed for a record of temporal change at one point in space.

E-20566

Be, A.W.H., Gilmer, R.W., **Zoogeographic and taxonomic review of euthecosomatous Pteropoda,** Oceanic micropalaeontology, Vol.1. Edited by A.T.S. Ramsay, London, Academic Press, 1977, p.733-808, Refs. p.789-796.

DLC QE719.023, Vol.1

Euthecosomatous pteropods are integral members of the marine ecosystem, but their biology and ecology are not well understood. Some aspects of their feeding and swimming behaviour, natural diet, reproduction and shell microstructure are discussed in this review paper. A classification of twenty-eight common euthecosomatous species is presented and illustrated with scanning electron micrographs. The majority of euthecosomatous species (21) inhabit the circumglobal warm-water belt. Only four species live in subantarctic-antarctic waters, of which three are also encountered in arctic-subarctic regions. Their distribution patterns are discussed and portrayed in zoogeographic maps. (Auth.)

E-20567

Casey, R.E., **Ecology and distribution of Recent radiolaria,** Oceanic micropalaeontology, Vol.2. Edited by A.T.S. Ramsay, London, Academic Press, 1977, p.809-845, Refs. p.835-838.

DLC QE719.023, Vol.2

The ecology and distribution of polycystine radiolarians are discussed, including cold water species in antarctic areas. Their life spans are probably less than a month, and their densities may reach as high as 82,000 individuals per cubic meter, with the highest densities usually below the upper 25 m and above a few hundred meters depth. They exhibit greatest diversity in the equatorial waters with the diversity decreasing and the tendency towards dominancy increasing poleward. Knowledge of their present day distribution and ecology has resulted in their use as palaeoecologic indicators in determining palaeotemperatures; and recent investigations using radiolarians have resulted in attempts to evaluate palaeodiversities, evolutions, mass mortalities, extinctions and selective extinctions in the geologic record as related to palaeo-oceanographic conditions.

E-20568

Schneidermann, N., **Selective dissolution of Recent coccoliths in the Atlantic Ocean,** Oceanic micropalaeontology, Vol.2. Edited by A.T.S. Ramsay, London, Academic Press, 1977, p.1009-1053, Refs. p.1041-1046.

DLC QE719.023, Vol.2

The coccoliths produced by chrysomonad algae in the Atlantic Ocean undergo selective dissolution upon entering the CaCO3 undersaturated waters below the surface. The level below which all coccoliths have been dissolved is termed the calcium carbonate compensation depth (CCCD). Coccoliths may settle through the water column as discrete particles so that their settling time approximates their residence time on the bottom before burial, or they may settle more rapidly as aggregates such as fecal pellets and thus be protected from corrosive deep ocean waters. The rate of dissolution affecting each species is a function of its skeletal ultrastructure, and within a single coccolith selective removal of skeletal elements proceeds in an orderly sequence. Holococcoliths are readily dissolved and rarely occur in oceanic sediments, but placoliths are highly resistant to solution and are concentrated near the CCCD; other heterococcoliths have intermediate levels of resistance. The variations in resistance to solution permits recognition of a series of dissolution zones in the ocean. These zones are deepest in the equatorial region and ascend toward the poles. The application of the data presented here to the reeognition of ancient compensation zones is considered. The discussion examines the distribution pattern and influence of Antarctic Bottom Water (ABW) in the Atlantic. (Auth. mod.)

E-20569

Ramsay, A.T.S., **Sedimentological clues to palaeo-oceanography,** Oceanic micropalaeontology, Vol.2. Edited by A.T.S. Ramsay, London, Academic Press, 1977, p.1371-1453, Refs. p.1449-1453.

DLC QE719.023, Vol.2

This chapter presents an attempt to elucidate elements in the palaeo-oceanography of the ocean since the Late Eocene. The following inter-related parameters have been examined: (a) the history of the calcite compensation depth, (b) the history of the 10% sand sized foraminiferal boundary, (c) the occurrence and geographical distribution of hiatuses. The history of the CCD and 10% foraminif-

eral boundary since the Late Eocene is considered in terms of possible changes in the pattern of deep-ocean circulation associated with climatic changes in Antarctica, the separation of Antarctica and Australia, the opening of the Drake Passage and the tectonic isolation of the Caribbean basin. The origin of regional hiatuses in deep-sea sediments is considered, and their stratigraphical occurrence in the South Atlantic, northwest Atlantic, Indian Ocean and southwestern Pacific and eastern North Pacific is analyzed. The geographical distribution of regional hiatuses and changes in their stratigraphical abundance are considered within the framework of a model of the modern abyssal circulation pattern, in terms of the history of the CCD, and in the light of climatic changes in Antarctica.

E-20570

Gordon, R.B., Cox, A., Harter, C.E., **Absolute motion of an individual plate estimated from its ridge and trench boundaries,** *Nature*, Aug. 24, 1978 274(5673), p.752-755, 28 refs.

A method is presented for estimating the absolute motion of an individual plate, using only the locations of trenches or ridges along the boundary of the plate. The change in trend of the Hawaiian-Emperor seamount chain is shown to be consistent with a change in absolute plate motion produced by a change in the location of ridges and trenches along the boundary of the Pacific plate. The motion of the antarctic plate is considered. (Auth. mod.)

E-20593

Wilson, A.T., Hendy, C.H., Taylor, A.M., **Peridot on Ross Island—Antarctica,** *Australian gemmologist*, Nov. 1974, p.124-125, 4 refs.

The semi-precious stone peridot was found during an expedition to the Cape Bird area. High quality peridot crystals were found in the moraines at several points and in the Cinder Hill area. Less than 20% of all crystals examined could be classed as facet-grade.

E-20600

Ravich, M.G., Solov'ev, D.S., Fedorov, L.V., **Geological structure of Mac. Robertson Land (East Antarctica)** [Geologicheskoe stroenie zemli Mak-Robertsona (Vostochnaia Antarktida)], Leningrad, Gidrometeoizdat, 1978, 230p., In Russian. 59 refs.

The book summarizes the geological studies carried out in 1971-1974 (as part of the Soviet Antarctic Expeditions) in Mac. Robertson and Princess Elizabeth Lands, East Antarctica. The area under study is East Antarctic craton where, along with the Archean crystalline basement, within narrow troughs of thickly folded Proterozoic formations, and in grabens, Permian coal-bearing deposits were recognized. The tectonic structure of the region allowed identification of a continental rift zone possibly filled in with Meso-Cenozoic rocks. The data concerning metamorphic and igneous rocks, as well as analyses of all the facies of regional metamorphism and a diagram of intrusive unit development, are provided. (Auth.)

E-20601

Stevens, G.R., **Mesozoic biogeography of the South-West Pacific and its relationship to plate tectonics,** International Symposium on the Geodynamics in South-West Pacific, Noumea, New Caledonia. 1976. Proceedings, Paris, Editions Technip, 1977, p.309-326, Refs. p.317-322.

DGS, 210(900).In8g

Fossil and sediment studies are discussed in an effort to discern links in Mesozoic fauna among the Gondwana areas. The author concludes that in Middle-Late Jurassic times a particularly good shallow water migration route was probably available for warm-temperature marine organisms in the southern Pacific. This route allowed such organisms to spread from the Iranian-Himalayan-Indonesian-New Guinea regions to New Caladonia and New Zealand and beyond to West Antarctica and South America.

E-20602

Meyerhoff, H.A., Meyerhoff, A.A., **Genesis of island arcs,** International Symposium on the Geodynamics in South-West Pacific, Noumea, New Caledonia, 1976. Proceedings, Paris, Editions Technip, 1977, p.357-370, Refs. p.365-367.

DGS, 210(900).In8g

The plate-tectonics hypothesis fails to explain (1) the geographic distribution of typical, or true island arcs; (2) their form, geometry, and orientation; (3) their variety (which is sufficient to warrant classification); and (4) the great range in ages of the rocks composing the arcs. The plate-tectonics concept also fails to provide a plausible explanation for the marginal seas associated with typical island arcs—those of the western Pacific, the Caribbean Sea, and the Scotia Sea. The authors postulate that island arcs are formed by surges in the asthenosphere (low-velocity zone); that flow within the asthenosphere is initiated by differential subsidence within the ocean basins or between ocean basins and adjacent continents; and that the direction of flow is guided and, in part, controlled or modified by the forces involved in earth rotation—namely, centrifugal force and differential lag between the lithosphere and the asthenosphere. All known facts support this postulate which, unlike plate-tectonics postulates, does not require the creation of innumerable *ad hoc* modifications to fit each arc or arc complex. (Auth.)

E-20618

Elderfield, H., Gunnlaugsson, E., Wakefield, S.J., Williams, P.T., **Geochemistry of basalt-sea-water interactions: evidence from Deception Island, Antarctica, and Reykjanes, Iceland,** *Mineralogical magazine*, June 1977 41(318), p.217-226, Refs. p.225-226.

Sea-water from Deception Island was found to contain 0.55-1.48 mg Mn per liter and and 10.2-64.3 mg Si per liter. Reaction of Deception Island basalt and sea-water at 190C and 500 bars simulated the measured water composition, but leaching experiments suggest that much of the Mn, etc., may derive from local volcanic ash. Mn and Mg in thermal waters at Reykjanes have concentrations compatible with equilibrium with components of montmorillonite present as an alteration mineral.

E-20619

Hofmann, J., **Geology and geological exploration of the antarctic continent. 2. West Antarctica and prospects of antarctic deposits** [Geologie und geologische Erforschung des antarktischen Kontinents. 2. Westantarktis und Lagerstättenperspektiven der Antarktis], *Zeitschrift für angewandte Geologie*, Dec. 1975 21(12), p.594-604, In German with English and Russian summaries. 45 refs. For Pt.1 see E-19397.

In the light of new research the West Antarctic fold belt (Antarctic Peninsula, Mary-Bird-Ld, Victoria Ld.) appears to be an orogenetic area consolidated during the early Mesozoic, in whose deeper tectonic stages elements consolidated during the post-Rossidian and Middle-to-Upper Palaeozoic occur. The Neogenic-Quaternary development of the Antarctic is characterized by intense movements of faulted blocks. The formation of a block structure having a subcontinental extent is accompanied by widely distributed volcanic processes. Proceeding from an alpine glaciation probably developed already during the Miocene, the principal zones of the Neogenic/Recent continental glaciation are formed within the area of the upper blocks. (Auth. mod.)

E-20622

Poehls, K.A., **Inter-arc basins: a kinematic model,** *Geophysical research letters.* May 1978 5(5), p.325-328, 31 refs.

A new kinematic model has been developed from observation of the three most typical active inter-arc basins: the Mariana trough, the Lau-Havre trough, and the Scotia Sea. It is observed that active inter-arc basins are found only where the subducted plate can interact with the plate behind the trench. This condition exists where trenches are terminated or offset by transform faults, or where large variations in subduction rates occur. Shear coupling between the two juxtaposed plates across a transform or strike-slip fault creates a tensional regime behind the island arc. Differential subduction velocities will couple the plate motions across both the more slowly subducting trench and across the intervening fracture zone. If the trench axis is assumed to move more slowly than a plate, inter-arc basin spreading may be initiated to conserve area. (Auth. mod.)

E-20631

Malmgren, B.A., Kennett, J.P., **Test size variation in Globigerina bulloides in response to Quaternary palaeoceanographic changes,** *Nature.* Sep. 14, 1978 275(5676), p.123-124, 15 refs.

Several different methods have been used to delineate Quaternary paleoclimatic trends in deep-sea sediments using phenotypic variation in planktonic foraminifera, including changes in coiling direction, pore concentration, and test surface ultrastructure. It is reported here that changes in mean sizes of *Globigerina bulloides* can also be used as a paleoclimatic index in the late Quaternary. Mean size oscillations of *G. bulloides* were examined in three late Quaternary cores from subantarctic waters of the southern Indian Ocean. The results from two of the cores are presented.

E-20674

Grikurov, G.E., Kamenev, E.N., Ravich, M.G., **Tectonic zonation and geological evolution of Antarctica** [Tektonicheskoe raĭonirovanie i geologicheskaia evoliutsiia Antarktidy], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten'*, 1978 No.97, p.15-35, In Russian. Refs. p.30-35.

This is a review article summarizing the state of knowledge of the formation of Antarctica. The various stages of tectonics are outlined from the period more than 4000 million years ago to the most recent alpine period, ten stages in all. The implications of current geological knowledge for mineral exploitation of Antarctica are briefly discussed.

E-20690

Lucchitta, B.K., **Morphology of chasma walls, Mars,** *U.S. Geological Survey. Journal of research.* Sep.-Oct. 1978 6(5), p.651-662, 23 refs.

The landforms developed on the walls of the Valles Marineris system of chasmas on Mars are of three major types, which are locally transitional—steep spurs and gullies, tributary canyons, and landslide morphology. Examples of each type and their distribution are shown. Similarities between landforms of the first two types in the Valles Marineris system and in Wright Valley are discussed and illustrated.

E-20692

John B.S., Sugden, D.E., **Coastal geomorphology of high latitudes,** Progress in geography, Vol.7, New York, St. Martin's Press, 1975, p.53-132, Refs. p.112-132.

DGS, 509.P943

This study of the geomorphological features common to ice-bound coasts is divided into the following portions: short-term marine variables (such as ice, waves, climate); terrestrial variables (such as river sediments); long-term variables (such as plate tectonics); long-term processes (erosion and deposition); and short-term erosion and deposition.

E-20697

Meteorite is cold, clean, carbonaceous, *Science news,* June 17, 1978 113(24), p.390.

A rare, golfball-sized meteorite from Antarctica was recently viewed at the moon rock facility of the NASA Johnson Space Center in Houston, Tex. Test sampling shows the rock to be a Type 2, carbonaceous chondrite. Details of the rock are being announced in a new *Antarctic meteorite newsletter,* being sent to about 900 researchers and science steering committees of member countries of the Antarctic Treaty.

E-20701

Barron, E.J., Harrison, C.G.A., Hay, W.W., **Revised reconstruction of the southern continents,** *American Geophysical Union. Transactions.* May 1978 59(5), p.436-449, Refs. p.447-449.

A revised reconstruction of the southern continents, based on the 2000-m contour, is proposed; it includes not only the salient features of previous reconstructions but also considers data from several critical areas. The Falkland Plateau is included as defined by the 3000-m contour. To prevent overlap and satisfy geologic constraints, the Antarctic Peninsula is placed to the western side of South America adjoining the Andean province and with Antarctica as a single unit. On the basis of geologic evidence, Madagascar is placed in a southerly position adjacent to Mozambique. The Seychelles are included as a continental fragment. Australia is shifted 250 km to the west with respect to Antarctica to produce a better geologic fit. A palinspastically reconstructed India is adjacent to western Australia and is fitted to a morphologically similar section of Antarctica. The Lord Howe Rise and Campbell Plateau are considered as two separate continental fragments. Although our revised reconstruction is controversial in some respects, it does remove many of the geologic inconsistencies present in earlier models. (Auth. mod.)

E-20703

Webb, P.N., comp, **Initial report on geological materials collected at RISP site J9, 1977-78,** RISP Technical report 78-1, Dekalb, Northern Illinois University, Sep. 1978, 46p., 9 refs.

This report summarizes the coring operations, field work, laboratory analyses and results obtained by the Ross Ice Shelf Project investigations at Site J9. Eleven gravity cores, ten sphincter cores and one bottom dredge sample were obtained at the site during Dec. 1977. Core descriptions, geological site data and the results of paleontological analyses are presented. Preliminary results indicate that fossil-rich mid-Miocene glaciomarine sediments are exposed at the seafloor. There is apparently no Pliocene or Pleistocene exposed at this site, presumably the result of relatively recent grounding and erosion during the latest phase of Ross Ice Shelf history.

E-20719

Popov, A.G., Lugovenko, V.N., Larkin, V.G., **Ocean floor structure in the southern Atlantic Ocean** [O stroenii okeanicheskogo dna v iuzhnoĭ chasti Atlanticheskogo okeana], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten'*, 1978 No.98, p.16-21, In Russian. 8 refs.

Magnetometer studies of the southern Atlantic Ocean were done from the research vessel *Navarin.* Results indicate that, although the South Atlantic ridge southwest of Bouvet Island is less pronounced than elsewhere, it can still be considered a typical mid-oceanic rise.

The rift zone of the Atlantic Ocean can be continued south, across the Antarctic continent and into the Indian Ocean. Thus the global rift system makes a complete closed circle and connects mid-oceanic ridges on opposite sides of the world.

E-20720

Bardin, V.I., Solov'ev, D.S., Tarutin, O.A., **Petrographic character of moraine deposits in Prince Charles Mountains (Mac.Robertson Land)** [Petrograficheskiĭ sostav morennykh otlozhenii v gorakh Prins-Charl'z (Zemlia Mak-Robertsona)], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten'*, 1978 No.98, p.22-26, In Russian. 6 refs.

Samples taken from the western side of the Lambert Glacier bed, from the Amery oasis in the north to Mount Rubin in the south, were examined to determine petrographic composition. In all 4100 pieces were studied, most of which came from the Amery oasis moraines. The bulk of the material tested was contemporary and Pleistocene rock, left behind by the glacier along and below mountain slope, (Mount Rubin, Mount Meredith, etc.) However, some of the material was basic and ablated moraines of Miocene-Pliocene(?) age. A chart showing each type of rock is provided.

E-20752

Ballance, P.F., **Beacon Supergroup in the Allan Hills, central Victoria Land, Antarctica,** *New Zealand journal of geology and geophysics,* 1977 20(6), p.1003-1016, 17 refs.

Gently dipping Beacon strata of the Allan Hills fall in the upper Victoria Group, and consist of three formations: Permian, *Glossopteris*-bearing, Weller Coal Measures (110 m), containing the new Feistmantel Member, overlain by unfossiliferous pebbly Feather Sandstone (300 m), overlain by the Triassic, *Dicroidium*-bearing, coal-bearing, Lashly Formation (120 m). Neither top nor bottom of the sequence is seen. Fining-upwards alluvial cycles are present in the Weller and Lashly Formations, cross-bedding is present throughout, and the entire sequence is interpreted as having been deposited within a northwest flowing, meandering river system. The abundant carbon and lack of indicators of sub-aerial exposure point to a permanently saturated flood plain. The coal-bearing cyclothems of the Weller Coal Measures lose their finer divisions in an eastwards lateral transition, and the Coal Measures, strictly speaking, are thus lenticular. The lower two formations contain chiefly quartz, mica, and potash feldspar, and were derived from an acid plutonic and medium-grade metamorphic terrain. The Lashly Formation contains low-grade metamorphic and volcanic grains in addition to quartz, potash feldspar, and sodic feldspar. Heavy minerals of the lower two formations are dominated by garnet, tourmaline and zircon, and those of the Lashly Formation by apatite. (Auth.)

E-20753

Kovach, J., Faure, G., **Sources and abundance of volcanogenic sediment in piston cores from the Ross Sea, Antarctica,** *New Zealand journal of geology and geophysics,* 1977 20(6), p.1017-1026, 17 refs.

The Sr-87/Sr-86 ratios and Sr concentrations of detrital silicate fractions of sediment of late Pliocene to Holocene age in the Ross Sea are controlled by the presence of varying proportions of volcanogenic detritus. A quantitative interpretation of the data in terms of a two-component mixing model leads to the conclusion that Mesozoic and Cenozoic volcanics of West Antarctica were the principal source of volcanogenic detritus in sediments of late Pliocene age. A thin and discontinuous layer of Holocene sediment contains much lower concentrations of volcanic detritus of basaltic composition. (Auth.)

E-20754

Bydder, E.L., Holdsworth, R., **Lake Vanda (Antarctica) revisited,** *New Zealand journal of geology and geophysics,* 1977 20(6), p.1027-1032, 9 refs.

The warm water, with temperatures up to 25C, found near the bottom of the ice-covered Lake Vanda in Victoria Land, has prompted a number of papers suggesting possible heating mechanisms. The Dry Valley Drilling Project site on Lake Vanda during the 1973-74 summer enabled temperatures in the lake sediment and underlying granite bedrock to be measured, offering a possibility of determining the source of heat. Data of previous workers and the present measurements extending over nine months of 1974 show that the heating mechanism is solar radiation. The temperature gradient beneath the lake confirms that there is a net loss of heat from the lake bottom, while a slab model of the lower lake temperature profile based on solar heating is consistent with the measured temperature profile. These results appear to eliminate the possiblity of geothermal heating. (Auth.)

E-20755

Quilty, P.G., **Late Jurassic bivalves from Ellsworth Land, Antarctica: their systematics and paleogeographic implications,** *New Zealand journal of geology and geophysics,* 1977 20(6), p.1033-1080, Refs. p.1074-1076.

Late Jurassic bivalves are described from several localities in eastern Ellsworth Land. Forty-one taxa are recorded, of which seven are previously described species, seven *(Grammatodon laudoni, Entolium lackeyi, Astarte marwicki, A. behrendtensis, A. ellsworthensis, Opis stevensi* and *(Corbicellopsis otwayi)* are described as new, four are compared with known species, and 23 are left in informal nomenclature. All seven previously described species are well known in New Zealand, as are many of the forms left in informal nomenclature. The affinities of the fauna are overwhelmingly with coeval New Zealand faunas, and New Zealand stratigraphic nomenclature is used except where ammonite control allows correlation with the worldwide stage terminology. The shallow water faunas are dominated by *Inoceramus* spp. and robust astartids. A brief tectonic analysis suggests that before continental breakup began, Africa and South America formed a single unit, the southern apex of which was located east of the Antarctic Peninsula in the area of the present Weddell Sea and that the Antarctic Peninsula was to its west. Alternative reconstructions and geological histories are presented and discussed. (Auth.)

E-20756

Kyle, R.A., **Palynostratigraphy of the Victoria group of South Victoria Land, Antarctica,** *New Zealand journal of geology and geophysics,* 1977 20(6), p.1081-1102, Refs. p.1099-1102.

Thirty-three plant microfossil assemblages, many of which are poorly preserved, have been recovered from the Victoria Group (upper Beacon Supergroup) of south Victoria Land, Antarctica. The broad assemblage zones, informally designated the *Parasaccites* zone (oldest), the *Protohaploxypinus* zone, and the *Alisporites* zone, are recognized in the palynological succession. The zones are separated by strata apparently lacking plant microfossils. *Parasaccites* zone assemblages occur in the Darwin Tillite, in equivalent rocks in the Ohio and Wisconsin Ranges, and in shales overlying tillite in the Nilsen Plateau. In terms of the Australian Late Carboniferous and Permian palynological zonal scheme, the *Parasaccites* zone is correlated with upper Stage 2 from Permo-Carboniferous glacial and fluvioglacial deposits in Australia. The *Protohaploxypinus* zone from the middle and upper parts of the *Glossopteris*-bearing Weller Coal Measures resembles the Australian Stage 4 of Early Permian (Artinskian) age. Assemblages of the *Alisporites* zone occur in the uppermost part of the Feather Conglomerate and throughout most of the *Dicroidium*-bearing Lashly Formation. The zone includes a succession of four

subzones comparable with the Early to Late Triassic succession described from Australia. The correlations of these zones are discussed. (Auth. mod.)

E-20757

Hendy, C.H., Wilson, A.T., Popplewell, K.B., House, D.A., **Dating of geochemical events in Lake Bonney, Antarctica, and their relation to glacial and climate changes,** *New Zealand journal of geology and geophysics,* 1977 20(6), p.1103-1122, Refs. p.1120-1122.

Measurements of major ion concentrations, O-delta 18 and C-14 content of the waters of Lake Bonney, have enabled a reinterpretation of the geochemical events which have taken place in the lake and enabled the age of some of these events to be estimated. The sequence appears to have been: 1) flooding of the Bonney basin with sea water about 100,000-300,000 years ago, some time after the last occupation of the lower Taylor Valley by the Taylor Glacier; 2) evaporation of the West Lobe to near dryness prior to 15,000 years B.P.; 3) penetration of the Bonney basin by meltwaters from the Taylor Glacier, and reflooding of the West Lobe by meltwaters derived in part from the glacier about 15,000 years ago; 4) reflooding of the East Lobe by meltwaters from the Taylor Glacier, as long ago as 5,000 years B.P., as a result of the glacier reaching a maximum extension close to its present position; 5) evaporation of the East Lobe to a depth of 19 m, perhaps as a result of a temporary retreat of the Taylor Glacier, producing a convecting, ice-free lobe saturated in sodium chloride; and 6) reflooding of the East Lobe by meltwaters from the Taylor Glacier overflowing the West as a result of a re-advance of the glacier or a decrease in the aridity of the climate. The reflooding began not less than 250 years ago. The Taylor Glacier is currently advancing and occupying part of the West Lobe. (Auth.)

E-20758

Kyle, P.R., **Mineralogy and glass chemistry of recent volcanic ejecta from Mt. Erebus, Ross Island, Antarctica,** *New Zealand journal of geology and geophysics,* 1977 20(6), p.1123-1146, Refs. p.1144-1146.

Bombs erupted in 1972 and recent flows of anorthoclase phonolite from Mt. Erebus both contain phenocrysts of anorthoclase and microphenocrysts of olivine, clinopyroxene, titanomagnetite, pyrrhotite, and apatite; the associated glass is peralkaline. The composition of glass inclusions in large anorthoclase phenocrysts, which form a lag gravel on the summit cone of Mt. Erebus, is generally more evolved than that from the groundmass of recent flows and bombs. Glass inclusions from between the core and rim of anorthoclase phenocrysts represent variations with time and show a small and systematic increase of Al2O3 and decrease of FeOT (total iron as FeO), possibly owing to reaction of the glass with the anorthoclase after entrapment. In contrast, whole rock-groundmass trends show decreasing Al2O3 and increasing FeOT. The whole rock compositions of recent flows and ejecta are similar to older (up to 1 m.y.) anorthoclase phonolite flows exposed around the base of Mt. Erebus. (Auth.)

E-20759

Kyle, R.A., **Devonian palynomorphs from the basal Beacon Supergroup of South Victoria Land, Antarctica,** *New Zealand journal of geology and geophysics,* 1977 20(6), p.1147-1150., 18 refs.

Poorly preserved palynomorphs have been recovered from a carbonaceous siltstone in the Terra Cotta Siltstone at Table Mountain, south Victoria Land, Antarctica. They indicate a probable Early Devonian age for the basal Beacon Supergroup in south Victoria Land. (Auth.)

E-20796

Scientific Committee on Antarctic Research, **SCAR Working Group on Geology,** *Polar record,* May 1978 19(119), p.197-201.

The meeting of the geology working group was held at Madison, Wis., Aug. 28-29, 1977. On the agenda were discussion of the third antarctic geology and geophysics symposium, the antarctic stratigraphic lexicon, a statement on annual national reports, report on antarctic mineral resources and mineral prospectivity, future geological programs, review of standing resolutions, recommendations, matters relating to representation on other bodies, the geology research program, election of officers, the next meeting, and other business.

E-20797

Scientific Committee on Antarctic Research, **Joint meeting of the SCAR Working Groups on Geology and Solid Earth Geophysics, Madison, USA, 29 August 1977,** *Polar record,* May 1978 19(119), p.201-204.

The geology and solid earth geophysics working groups heard reports from the working groups on the Scotia Arc and antarctic volcanology, considered matters relating to antarctic maps, antarctic mineral resources, and the Commission on Marine Geology, and approved five recommendations for future studies. A joint statement was issued by the working groups emphasizing the continuing need for fundamental scientific studies of antarctic geology and geophysics.

E-20798

Ledbetter, M.T., Watkins, N.D., **Separation of primary ice-rafted debris from lag deposits, utilizing manganese micronodule accumulation rates in abyssal sediments of the Southern Ocean,** *Geological Society of America. Bulletin,* Nov. 1978 89(11), p.1619-1629, 23 refs.

An empirical relationship between ice-rafted debris and Mn micronodules in the Southeast Pacific Ocean has been used to suppress the lag component in the total ice-rafted debris signal in order to isolate the ice-rafted debris caused by increased iceberg supply associated with increases in glacial activity in Antarctica. Six periods of increases in Mn micronodule production are defined at intervals of 100,000 to 110,000 yr. The linear correlation coefficient between ice-rafted debris and Mn micronodules during the past 690,000 yr defines two areas of intense winnowing, separated by the East Pacific Rise. The southernmost zone corresponds to an area independently described as one of high bottom-current activity. Results indicate that the intensity of bottom-current winnowing on the north flank of the East Pacific Rise may be as great as in the southern zone. This could mean that the Eltanin Fracture Zone serves as a conduit for high-velocity Antarctic Bottom Water flowing onto the northern flank of the East Pacific Rise. (Auth. mod.)

E-20803

Hutson, W.H., **Application of transfer functions to Indian Ocean planktonic foraminifera,** *Quaternary research,* Jan. 1978 9(1), p.87-112, Refs. p.111-112.

The distribution and abundance of planktonic Foraminifera from the Indian Ocean are used to illustrate geographic variations in faunal assemblages in the plankton and on the seabed caused by sedimentary and postdepositional processes and to analyze the effect of these variations on paleoecological reconstruction. Principal components analysis of these data describes the composition and distribution of faunal assemblages in plankton-tow samples, low-dissolution core-top samples, and high-dissolution core-top samples. Factor-comparison analysis describes the relationships among these three sets of assemblages: The species composition of low-dissolution faunal assemblages may be accurately described as a simple linear mixing of plankton assemblages. The geographical distributions of the faunal assemblages in the sediments, however, are often displaced equatorward of their counterparts in the plankton. (Auth. mod.)

E-20804
Williams, D.F., Keany, J., **Comparison of radiolarian/planktonic foraminiferal paleooceanography of the subantarctic Indian Ocean,** *Quaternary research.* Jan. 1978 9(1), p.71-86, 50 refs.

A detailed paleoceanographic history of the subantarctic region for the last million years was determined using paleomagnetic stratigraphy, radiolarian and planktonic foraminiferal biostratigraphy, and the oxygen isotope record from stages 1 to 14 (0.5 MY) in a deep-sea core from the southern Indian Ocean. Changes in the abundances of *Antarctissa strelkovi* and *Neogloboquadrina pachyderma* record 12 glacial/interglacial cycles. The paleoceanographic events based on the combined results of these siliceous and calcareous indexes agree with changes in the global ice-volume record. Intense periods of calcium carbonate dissolution are associated principally with glacial episodes and are probably related to increased Antarctic bottom-water activity as well as changes in surface-water mass positions. (Auth.)

E-20807
Volokitina, L.P., **Geomorphological map of the Indian Ocean and Pacific Ocean antarctic sectors** [Geomorfologicheskaia karta indookeanskogo i tikhookeanskogo sektorov Antarktiki], *Geomorfologiia,* Apr.-June 1978 No.2, p.66-72, In Russian with English summary. 10 refs.

A new geomorphic map of the Indian and Pacific sectors of the Antarctic is compiled, scale 1:5,000,000. The legend is based on the genesis and describes geotextures, morphostructures, morphosculptures and planation surfaces, dissection and individual sea floor forms. According to data on sediment yield and sedimentation rate, some sea floor parts are indicated having completely planated bottom and tectonic forms mantled by sediments. Special features of the morphostructure distribution are revealed. (Auth.)

E-20846
Colbert, E.H., **Fossils and the drifting continents,** *Fossils magazine,* May 1976 1(1), p.5-23.

QE701.F75 SI

The fossil records of the land-living vertebrates—amphibians, reptiles and mammals—are examined in order to determine if their distributions can be logically and reasonably explained according to the theory of plate tectonics. It is concluded that new discoveries of fossils, particularly of Mesozoic age, in South America and in Antarctica, firmly support the concept of moving crustal plates and moving continents. Maps and animals are colorfully illustrated.

E-20847
Lugg, D.J., Johnstone, G.W., Griffin, B.J., **Outlying islands of Macquarie Island,** *Geographical journal,* July 1978 144(2), p.277-287, 24 refs.

Close to Macquarie Island there are two groups of outlying islands, the Judge and Clerk group 14 km to the north and the Bishop and Clerk group 33 km to the south. This paper reports on a short visit to the Bishop and Clerk Islands and aerial surveys of the Judge and Clerk Islands and of Anchor Rock (an offshore stack). The field work was carried out in Feb. 1976. The geography and historical records of these islands are summarized, and new information on their geology and biology is presented. (Auth.)

E-20848
Plume, R.W., **Revision of the existing stratigraphy of the New Mountain Sandstone (Beacon Supergroup), south Victoria Land, Antarctica,** *New Zealand journal of geology and geophysics,* 1978 21(2), p.167-173, 26 refs.

Detailed field work on the New Mountain Sandstone (Beacon Supergroup) in the McMurdo Sound region has shown that the basal Windy Gully Sandstone and Terra Cotta Siltstone Members extend from the Royal Society Range north to the Olympus Range, a distance of about 100 km. Identification of the Boreas Subgreywacke Member in the Asgard Range has confirmed that the member overlies the Terra Cotta Siltstone. In addition, a distinctive siltstone unit of small areal extent was recorded within the New Mountain Sandstone at Plane Table in the Asgard Range. It is proposed that the Windy Gully Sandstone and Terra Cotta Siltstone Members be raised to formation status and that they retain their present names. Use of the term New Mountain Sandstone, is restricted to the quartzose sandstone overlying the Terra Cotta Siltstone and truncated by the Heimdall Erosion Surface. The Boreas Subgreywacke Member retains its present status, and a new unit, the Plane Table Member, is also included in the New Mountain Sandstone (new usage). The term New Mountain Subgroup is proposed to refer to those rocks of the Beacon Supergroup in the McMurdo Sound region that lie between Precambrian and Early Paleozoic basement rocks and the Heimdall Erosion Surface.

E-20849
Barret, P.J., Froggatt, P.C., **Densities, porosities, and seismic velocities of some rocks from Victoria Land, Antarctica,** *New Zealand journal of geology and geophysics.* 1978 21(2), p.175-187, 42 refs.

Density, porosity, and compressional wave velocity have been measured in the laboratory for 75 samples representing the major work units of Victoria Land and the adjacent sea floor. The data are organized according to the major stratigraphic divisions of the region and are discussed under the following headings: the Basement Complex, the Beacon Supergroup and Ferrar Group, Cenozoic sedimentary rocks, and the McMurdo Volcanic Group. Procedures for sample preparation and measurement are described, and qualifications on use of the data are discussed.

E-20851
Kerr, R.A., **Plate tectonics: hot spot implicated in ridge formation,** *Science.* Nov. 3, 1978 202(4367), p.503-505.

Recent data indicate that the Ninetyeast Ridge in the Indian Ocean formed at a hot spot. Suggested candidates for the Ninetyeast Ridge source are the hot spot marked by Amsterdam I. and St. Paul I. at about 40S and the one marked by Kerguelen Island at about 50S. The isotopic and chemical compositions of ridge rocks favor its origin at the Kerguelen hot spot. Details of probable plate movements during formation of the Ninetyeast Ridge, incorporating Kerguelen I. as the hot spot source, are outlined.

E-20860
Chen, P.-H., **Significance of the Pleistocene occurrence of Helotholus vema in high-latitude sediments,** *Geological Society of China. Proceedings.* Apr. 1977 No.20, p.71-78, 30 refs.

G(611) G292p

A previously reported Pliocene index Radiolaria in antarctic deep sea sediments, *Helotholus vema,* has been found in Pleistocene sediments. This suggests that the disappearance of this species near the paleomagnetic Gauss/Matuyama boundary may have resulted from a major climatic cooling. Since then, the species inhabited the subantarctic water and migrated back into the Antarctic during a Pleistocene warming episode, beginning 0.5 m.y. ago. (Auth.)

E-20870
Claridge, G.G.C., Campbell, I.B., **Moraines of probable Miocene age, Dry Valleys, Antarctica,** *New Zealand antarctic record,* 1978 1(2), p.1-5, 3 refs.

Recent investigations of old moraine deposits found at the mouths of all valleys between Tyrol and Niebelungen Valleys indicate a press-

ured ice advance westward up the Wright Valley between the time the valley was first cut during the mid-Miocene times and the Wright Upper IV episode which occurred more than 3.7 m.y.a. Features of the dry valleys displaying evidence of this very early ice advance are cited. The presence of 1300 m of ice moving in a westerly direction in the Wright Valley implies a great depth of grounded ice in the Ross Sea associated with a low sea level during the late Miocene-early Pliocene times.

E-20871

Campbell, I.B., Claridge, G.G.C., **Nature of the soil of Mars: evidence from Antarctica,** *New Zealand antarctic record,* 1978 1(2), p.6-9, 8 refs.

Based on observations of the Martian surface and similarities recognized between Martian soils and the older soils of Antarctica, it is concluded that the soils on Mars have been formed through long-continued weathering of basic igneous rocks, and that they consist of a mixture of coarse and fine material to a depth of several meters, of which all except the upper meter is ice-cemented. Weathering has caused exposed surfaces of all rocks to be covered with a film of iron oxides, clay minerals and other weathering products. The clay content of the Martian surface is greater than that of even the most weathered antarctic soils.

E-20872

Wright, A.C., **Reconnaissance study of the McMurdo volcanics northwest of the Koettlitz Glacier,** *New Zealand antarctic record,* 1978 1(2), p.10-15, 6 refs.

The geology and petrography of the McMurdo volcanics northwest of Koettlitz Glacier are discussed. A wide variety of features caused by volcanic eruption under glacial and periglacial conditions are present. The petrographic variety of the lavas, especially of those containing nodules and megacrysts, such as the lava flow and intrusion at Brandau Crater, seems suitable for determining magmatic crystallization history.

E-20873

Blattner, P., **Geology and geochemistry of Mt Dromedary Massif, Koettlitz Glacier area, southern Victoria Land—Preliminary report,** *New Zealand antarctic record,* 1978 1(2), p.16-19, 3 refs.

The Mt. Dromedary Massif is comprised of two bodies of biotite-flasergneiss, overlain concordantly by predominantly pelitic and calcareous metasediments. Both flasergneiss and metasediments are cut by abundant dikes of medium to fine-grained aplitoid granite, as well as basic dikes, and the occasional dike or plug of McMurdo volcanics. The two bodies may be interpreted as "mantled gneiss domes." In the Glee Glacier area, which has not been related tectonically to the gneiss domes, granite intrudes a very large sequence of almost pure marble of the Ross Supergroup. The geochemistry of the area is described.

E-20879

Glasby, G.P., **Major element geochemistry of Ross Sea sediments,** *New Zealand antarctic record,* 1978 1(2), p.51-58, 15 refs.

This study is part of a comprehensive survey of 348 sediment samples from the SW Pacific, DSDP and Ross Sea sediments. The data presented confirm Angino's (1966) hypothesis of significant variation in composition between glacial marine and other shelf sediments. In particular, the Ross Sea sediments are higher in Fe, Mn, Ti, K, Si, Al, and Mg and lower in Ca and P, than New Zealand shelf sediments. Part of the reason for this is the low carbonate content of Ross Sea sediments reflecting the shallow carbonate compensation depth for the Ross Sea. The enrichment sequence for average sediment analyses from the Ross Sea relative to the New Zealand shelf is in the order K (2.0) Mn (1.6) Si (1.5) Mg (1.5) Ti (1.4) Fe (1.3) Al (1.2) P (0.6) Ca (0.1). The similarity in the enrichment of Mn, Si, Mg, Ti, Fe and Al indicates that a major factor influencing the difference in composition of glacial and non-glacial shelf sediments is the carbonate content of the sediments. The lower P content of the glacial marine sediments may reflect its preferential uptake in the colder and more productive sea water of the Ross Sea region rather than its incorporation in the sediment. The mean analysis of the Ross Sea sediments is, however, remarkably similar to that of the surface sediments from the Southern Barents Sea, which suggests that glacial and non-glacial marine sediments are not always characterized by markedly different compositions.

E-20888

Hall, W.B., **Polar mining,** *Mining congress journal,* July 1975 61(7), p.46-51.

A Bureau of Mines expert discusses the mineral potential of Antarctica. Although the continent does not now have any commercial deposits, there is evidence of mineral wealth. Extraction and transportation costs would, of course, be extremely high. Mining experience in the Arctic sheds light on cold region demands.

E-20902

Strakhov, N.M., **Two patterns of modern global lithogenesis and their methodology,** *International geology review,* Nov. 1978 20(11), p.1239-1250, 18 refs.

An analysis of the mechanism of sediment formation in high-latitude zones (around Antarctica) has shown that a decisive factor in the sedimentary process here is not ice, but water; the glacial type of lithogenesis is absent in the ocean. Sedimentation in the subtropical regions is controlled not by the arid climate, but by the unusual hydrologic regime of these regions. Thus, a global pattern that provides for the presence of three climatic types of lithogenesis in the ocean is erroneous. Oceanic formation (outside regions of volcanism) is uniform throughout its entire extent and is set off against three climatic types on the continental block as a whole. The causes for this difference are pointed out. (Auth.)

E-20905

Heusser, C.J., **Additional postglacial pollen diagram from Patagonia Occidental,** *Pollen et spores,* 1972 14(2), p.157-167, 28 refs.

DSI, 581.3205P733

Pollen analyses of samples from a section of cushion bog located at Puerto Eden on Isla Wellington in the Chilean Province of Magallanes show the following zonal sequence: (1) a beech maximum preceded by *Empetrum* predominance, (2) secondary *Empetrum* predominance, (3) a maximum of *Dacrydium* and *Podocarpus*, and (4) beech predominance. At the beginning of peat deposition at the site, 9670 radiocarbon years ago, vegetation appears to have been treeless, for the most part, and dominated by *Empetrum*. The southward migration of *Dacrydium* and *Podocarpus* to Isla Wellington and the subsequent expanse of these genera there constitute late-postglacial events. The zone II prominence of *Empetrum*, interpreted to result from the advance of this montane plant at low elevations at the expense of beech forest, is suggestive of a cooler climate with greater frequency of storms. It may represent palynological evidence for the climatic change that gave rise to extensive glacier advance in the Patagonian Andes about 5000 years ago. (Auth.)

E-20931

Mezhduvedomstvennyĭ komitet SSSR po mezhdunarodnomu gidrologicheskomu desiatiletiiu, Korzun, V.I., ed, **World water balance and water resources of the earth,** Paris, UNESCO, 1978, 663p., Translation of Mirovoĭ vodnyĭ balans i vodnye resursy zemli, Leningrad, 1974. Refs. p.625-659. Pertinent p.474-489.

DLC GB665.M6513

This monograph shows the results of studies of the laws of water circulation and the water balance of the world. Data on water storage of the earth are given as well as on the areal distribution of water resources and periods of natural recharge of some types of water resources. Computations are presented of the water balance of large river basins, lakes, reservoirs, regions, continents, oceans and the whole globe. Fresh-water resources of the world and their time and space variations are evaluated. Section 5.9 deals with Antarctica—precipitation, evaporation and condensation, runoff and ice discharge, and water balance. (Auth. mod.)

E-20944

Llambias, E.J., Leveratto, M.A., **Buchites in basalts in the Payún Matrú volcano and the Matienzo Base in the Argentine Antarctic** [Buchitas en basaltos del volcán Payún Matrú, Mendoza, y de la base conjunta Tte. B. Matienzo, Sector Antártico Argentino], *Buenos Aires. Asociación Geológica Argentina. Revista,* 1966 21(2), p.119-127, In Spanish with English summary. 17 refs.

In this paper are described two quartzose xenoliths, partially melted, included in olivinic basaltic lavas, which illustrate two interesting cases of buchites. The one which belongs to the Payún Matrú volcano, originally a quartzitic sandstone, is formed by quartz relicts and also by glass, tridymite, cordicrite, and mullite (or sillimanite). On the other hand, in that of the Base Matienzo, the products of the pyrometamorphism are: glass and tridymite, its composition being practically pure quartz. In both cases, there has been a process of miscibility between the basaltic liquid and those of the fusion. This process has not been completed because of the quick cooling of the whole, which did not permit the total homogenization of the liquids. (Auth. mod.)

E-20960

Antarctic Meteorite Working Group, **Antarctic meteorite newsletter, Vol.1, No.3,** Houston, Tex., NASA Johnson Space Center, Nov. 1978, 38p.

This issue provides information on procedures for requesting meteorite samples, sample allocations, official meteorite names, planned field activities for the 1978-79 antarctic summer season, characteristics of the 1977 collection, mailing, and additional comments. Also provided are a summary table of all meteorites which have been described to date, data sheets for 27 antarctic meteorite samples, and an update sheet reporting important characteristics of meteorites learned since publication of their data sheets. By decision of the Nomenclature Committee, the official meteorite name will be composed of the place name closest to the find, followed by a letter designating the search party, and a five-digit number beginning with the Dec. year of the austral summer season as the first two digits, and the individual meteorite number as the last three. A histogram depicts the approximate mass of the 1977 collection. Approximately 95% of the total mass of the collection is contained in specimens weighing 100 g or more. Publication of a catalog of the 1977 collection by the Smithsonian Institution is planned.

E-20961

Carter, A.N., **Phosphatic nodule beds in Victoria and the late Miocene-Pliocene eustatic event,** *Nature,* Nov. 16, 1978 276(5685), p.258-259, 39 refs.

Continental evidence of the late Miocene expansion of the Antarctic ice cap and eustatic fall of sea level is still scarce. Here, phosphatic nodule beds in Victoria, Australia and other parts of the world are correlated with these events and with each other. Sedimentological and paleontological evidence associates the Victorian beds with the late Miocene regressive phase and not with the succeeding early Pliocene phase of deposition. A fauna including whalebone, crabs and the nautiloid *Aturia,* accompanies the phosphatic nodules. The unusual abundance of phosphatic nodule deposits in the late Miocene is attributed to the contemporaneous evaporation, in the Mediterranean, of phosphate-deficient surface water derived from the North Atlantic, which created an enrichment in phosphate in the world ocean, of which the oversaturation surplus was precipitated. A further association of the phosphatic nodule beds with areas of upwelling is postulated to account for their discontinuous occurrence. A temporary northwards migration of the Antarctic convergence during the late Miocene glacial period could result in upwelling of Antarctic bottom water and consequent phosphate deposition on the Australian southern and eastern continental shelves, the Aghulas Bank, the Campbell Plateau and Chatham Rise.

E-21003

Sykes, L.R., **Intraplate seismicity, reactivation of preexisting zones of weakness, alkaline magmatism, and other tectonism postdating continental fragmentation,** *Reviews of geophysics and space physics,* Nov. 1978 16(4), p.621-688, Refs. p.682-688.

The distribution of intraplate earthquakes and of igneous rocks postdating continental rifting is summarized and placed into a plate tectonic framework for the following continental areas: eastern and central North America, Africa, Australia, Brazil, Greenland, Antarctica, Norway, Spitsbergen, India, and the margins of the Red Sea and Gulf of Aden. In continents, intraplate earthquakes tend to be concentrated along preexisting zones of weakness within areas affected by the youngest major orogenesis that predates the opening of the present oceans. Many preexisting zones of weakness (including fault zones, suture zones, failed rifts, and other tectonic boundaries), particularly those near continental margins, were reactivated during the early stages of continental separation. In contrast, intraplate shocks rarely occur within the older oceanic lithosphere or within the interiors of ancient cratonic blocks of the continents. In several continental areas, rocks and tectonic features postdating the opening of present-day oceans, including carbonatites, kimberlites, other alkalic rocks, mafic dikes, and ring dikes, as well as some of the largest intraplate shocks, seem to be located preferentially along old zones of weakness near the ends of major oceanic transform faults that were active in the early opening of adjacent oceans. (Auth.)

E-21005

Crowell, J.C., **Gondwanan glaciation, cyclothems, continental positioning, and climate change,** *American journal of science,* Dec. 1978 278(10), p.1345-1372, Refs. p.1369-1372.

Paleontological dating shows that the Late Paleozoic Ice Age lasted for about 90 m.y. from within early Carboniferous until mid-Permian time. During this long interval, ice centers waxed and waned as the united Gondwana supercontinent (South America, including the Falkland I., Antarctica, Africa, India, and Australia) drifted near and across the south pole. The direct record of the glaciation, as indicated by sculptured and striated landforms and sparse remnants of associated glacigene sediments, is fragmentary. The indirect record, as may be preserved within cyclic stratal sequences (cyclothems) on distant cratons whose cycles may record the integrated rise and fall of world sea level, is perhaps more sensitive to the waxing and waning of ice centers. But factors other than glaciation, including changes in pattern and rates of sea-floor spreading and continental compression, influence the rise and fall of sea level. The

continental freeboard curve as now constructed from worldwide seismic, stratigraphic, and other investigations, shows that sea level was lowered no more than a few hundred meters during the Late Paleozoic glaciation; the conclusion follows that during the 90 m.y. interval different ice centers came and went. (Auth. mod.)

E-21009

Alarcón, B., Ambrus, J., Olcay, L., Vieira, C., **Geology of the Gerlache Strait between 64 and 65 deg S, Chilean Antarctica** [Geología del Estrecho de Gerlache entre los paralelos 64 y 65 Lat. Sur, Antártica Chilena], *Instituto Antártico Chileno. Serie cientifica,* 1976 4(1), p.7-46, 19 refs. In Spanish with English summary.

The purpose of this study was a reconnaissance mapping of the Gerlache Strait region between 64 and 65S at a scale of 1:200,000, and definition of areas of future economic interest. The region is characterized by a sequence of stratified marine and volcanic rocks ranging in age from Triassic to Pleistocene. The Gerlache Strait region has been affected by three distinct phases of tectonic activity with different directions of stress and ages. The oldest NNW tectonic phase is represented by folded and faulted rocks exposed along the Danco Coast. The second phase of tectonic stress was parallel to the Gerlache Strait. The youngest transcurrent tectonic phase affects the Tertiary rocks. From a metallogenic point of view, four interesting areas have been described, each one showing evidence of the following ore deposits: Vetiform copper; polymetallic, copper, lead and zinc; porphyry copper and magmatic iron. (Auth. mod.)

E-21017

Harney, T., **Curator finds rare meteorites in antarctic group,** *Smithsonian Institution. Research reports,* Autumn 1978 No.22, p.3,5.

Two rare meteorites have been identified by the Museum of Natural History curator among 310 specimens, representing 30-40 different meteorites, gathered on patches of bare ice in the Transantarctic Mts. by the US-Japanese expedition in late 1977 and early 1978. One of the two represents the first new class of achondrites to be discovered in 60 yr. The other is a Type II carbonaceous chondrite which is characterized by a high carbon content. The meteorites had been preserved from contamination and decay by Antarctica's snow, ice and freezing temperatures. The specimens were shipped to special moon rock handling facilities at the Johnson Space Center in Houston, where they were photographed, sorted and given a preliminary microscopic examination. Scientific descriptions have been prepared of the eight most unusual samples, including the two rarities.

E-21051

Minster, J.B., **Present-day plate motions,** *Journal of geophysical research,* Nov. 10, 1978 83(B11), p.5331-5354, Refs. p.5350-5354.

A data set comprising 110 spreading rates, 78 transform fault azimuths, and 142 earthquake slip vectors has been inverted to yield a new instantaneous plate motion model, designated Relative Motion 2 (RM2). A detailed comparison of RM2 with angular velocity vectors, which best fit the data along the individual plate boundaries, indicates that RM2 performs close to optimally in most regions, with several notable exceptions. The model systematically misfits data along the India-Antarctica and Pacific-India plate boundaries. It is hypothesized that these discrepancies are manifestations of internal deformation within the Indian plate; the data are compatible with northwest-southeast compression across the Ninetyeast Ridge at a rate of about 1 cm/yr. RM2 also fails to satisfy the east-west trending transform fault azimuths observed in the French-American Mid-Ocean Undersea Study area, which is shown to be a consequence of closure constraints about the Azores triple junction. (Auth. mod.)

E-21053

Chase, C.G., **Extension behind island arcs and motions relative to hot spots,** *Journal of geophysical research,* Nov. 10, 1978 83(B11), p.5385-5387, 30 refs.

The spatial distribution and episodic nature of behind-arc spreading is as yet unexplained. The present sites of rapid marginal basin opening well developed enough to be producing unmistakable oceanic crust are the Tonga-Kermadec, Mariana, and Scotia arcs and the Andaman Sea. In relation to a hot spot reference frame the major plate lying behind the trench in all these spreading arc systems moves away from the subduction zone (retreats). Taking into account the behind-arc spreading, almost all of the oceanic subduction zones advance in the hot spot frame, i.e., move toward the side from which the subducted slab approaches. This leads to the suggestion that marginal basin opening may be related to a component of 'trench suction' in the driving forces of plate tectonics. (Auth.)

E-21079

Turner, M.D., **Antarctic mineral resources,** *Frontiers,* Autumn 1978 43(1), p.27-29.

DSI 505.73F93

The coal beds of the Transantarctic Mts., discovered in the early 1900's, were the first mineral deposits seen in Antarctica. Deposits described by various geologists range from sand and gravel to the more exotic gem stones (poor quality beryl, topaz and tourmaline in Queen Maud Land). Quite extensive deposits of iron are reported from Queen Maud Land, and several copper deposits have been found in the Antarctic Peninsula. Five significant research programs are directly related to an assessment of potential mineral resources: 1) the Dufek Intrusion, 2) radioactivity, 3) oil and gas potential of the continental shelf, 4) manganese nodules in the Southern Ocean, and 5) icebergs as water sources. No mineral deposits of present commercial value have yet been found. Considering Antarctica's geological relationships to the other southern continents, it is probable that a large mineral deposit will be found. Exploitation would then depend upon the accessibility of the deposit, appropriate technology, price level of the mineral, and adequacy of the resource management regime.

E-21085

Covacevich, V., **Valanginian fauna in the Byers Peninsula, Livingston Island** [Fauna Valanginiana de Peninsula Byers, Isla Livingston, Antarctica], *Revista geologica de Chile,* 1976 No.3, p.25-56, Refs. p.51-54. In Spanish with English summary.

This work deals with a new fossiliferous level from Byers Peninsula, Livingston Island, Antarctica, which contains 15 different mollusk species. Two of them *Nucula (Nuculoma) livingstonensis* and *"Macrocallista" antarctica,* are described for the first time. Ammonites, characterized by *Bochianites* aff. *glaber* Kitchin, *B.* aff. *gerardi* (Stoliczka), *Uhligites* sp. (Sp. nov.?) and *Neocomites neocomiensis* aff. *premolica* Saya, permit assignment of a Valanginian age to this assemblage showing close faunistic relations with East Africa and Madagascar. These fossils are stratigraphically under the Cerro Negro continental beds—with a Barremian fossil flora—and over previously known levels with *Spiticeras (S)* cf. *spitiensis* (Blanford) from Livingston Island Berriasian. (Auth.)

E-21086

Gonzalez Ferran, O., Baker, P., **Paulet Island and recent volcanism in the islands of the northwest Weddell Sea** [Isla Paulet y el volcanismo reciente en las islas del Weddell noroccidental, Antártica], *Revista geográfica de Chile,* 1972-1973 No.23/24, p.25-43, In Spanish. 11 refs.

The volcanism and petrology of a number of islands at the tip of the Antarctic Peninsula are discussed. Chemical analysis of volcanic

and igneous rocks of Paulet Island, Dundee Island and other outcrops and island groups in the northwest portion of the Weddell Sea is presented in tables. General views of the areas under study, and geological details are shown in photographs.

E-21087
Gonzalez Ferran, O., Halpern, M., **Age of Mount Andrus and Sr 87/Sr 86 ratio of volcanic rocks in Marie Byrd Land and the South Shetlands** [Edad del volcán Andrus y relacion inicial Sr 87/Sr 86 de rocas volcanicas de Tierra Maria Byrd e islas Shetland del Sur, Antártica], *Revista geográfica de Chile,* 1972-1973 No.23/24, p.192-199, 24 refs. In Spanish with English summary.

Analyses of strontium isotopic composition of volcanic rocks from Marie Byrd Land and the South Shetland Islands indicate a probable upper mantle source region for the magma. Andrus volcano in Marie Byrd Land is dated at 10.8 m.y. by Rb/Sr total rock isochron method. (Auth.)

E-21092
McGinnis, L.D., **Polar groundwater—a thermo-saline system,** Colloquium on Planetary Water and Polar Processes, 2nd, Hanover, N.H., Oct. 16-18, 1978, [1978], p.6-8, 11 refs.

Hydrogeologic features discovered during the course of the Dry Valley Drilling Project in the McMurdo Sound suggest a dynamic—contemporary and ancient—hydrogeologic system, despite the fact that the mean annual sea level temperature has probably not risen above -18C in the last several million years. This system is superimposed upon a static, freeze-immobilized, permafrost terrain. A hole drilled into McMurdo Sound from sea ice, over 122m of water, encountered fresh water (probably ice) at 30 m below bottom. This water is terrestrial in origin and has been preserved at least since the last sea level lowering during Pleistocene time. Hydrochemical stratification evidenced in most DVDP boreholes reveals a record that is interpreted as alternating terrestrial and marine deposition.

E-21093
Pang, K., Chun, S., Ajello, J., **On the survival of organic compounds in the polar regions of Mars,** Colloquium on Planetary Water and Polar Processes, 2nd, Hanover, N.H., Oct. 16-18, 1978, [1978], p.74-75, 4 refs.

Photochemical synthesis and meteoritic infall can produce a contemporary accumulation of organic compounds on Mars. The recent discovery of pristine samples of carbonaceous chondrites in Antarctica raises the possibility that such meteorites, rich in organic compounds, may also be preserved in the polar regions of Mars, as in the blue ice of Antarctica.

E-21095
Webb, P.N., Ronan, T.E., Jr., Lipps, J.H., DeLaca, T.E., **Miocene glaciomarine sediments from beneath the southern Ross Ice Shelf, Antarctica,** *Science,* Feb. 2, 1979 203(4379), p.534-437, 14 refs.

Glaciomarine sediments with middle Miocene microfaunal assemblages are exposed at the sea floor below the southern Ross Ice Shelf. Plio-Pleistocene sediments are not present. Post-Miocene glacial sediments may have been deposited but removed by relatively recent ice shelf grounding. A meager Recent microfauna is present in some core tops. (Auth.)

E-21096
Brady, H., Martin, H., **Ross sea region in the Middle Miocene: a glimpse into the past,** *Science,* Feb. 2, 1979 203(4379), p.437-438, 6 refs.

Fossil diatoms and pollen from sea-floor sediments beneath the Ross Ice Shelf indicate that a permanent ice cover was not present in the Ross Sea and that vegetation including angiosperms, gymnosperms, and ferns existed on at least some parts of the largely glaciated antarctic mainland in the late middle Miocene. (Auth.)

E-21104
Fireman, E.L., Rancitelli, L.A., Kirsten, T., **Terrestrial ages of four Allan Hills meteorites: consequences for antarctic ice,** *Science,* Feb. 2, 1979 203(4379), p.453-455, 17 refs.

The terrestrial ages of three Allan Hills meteorites are between 30,000 and 300,000 yr and one is 1,540,000 yr old. The antarctic ice sheet is therefore older than 1,540,000 yr, and the meteorite accumulation process at Allan Hills probably began between 30,000 and 300,000 yr ago. (Auth.)

E-21116
Bruhn, R.L., Dalziel, I.W.D., **Destruction of the Early Cretaceous marginal basin in the Andes of Tierra del Fuego,** Island arcs, deep sea trenches and back-arc basins, Washington, D.C., American Geophysical Union, 1977, p.395-405, 35 refs.

DLC QE511.2.I84

The upper part of an ophiolite suite (gabbro, sheeted dikes, pillow lavas, sedimentary cover), preserved in the Andean Cordillera from S 51 latitude to Cape Horn, represents the floor of a back-arc marginal basin. The basin formed near the Jurassic-Cretaceous boundary by spreading within a volcanic chain along the Pacific margin of the South American plate. Starting in the middle Cretaceous, the marginal basin was destroyed when the frontal arc and basin floor were uplifted relative to the remnant arc and translated towards the interior of the plate. South Georgia is interpreted as an off-faulted part at the floor and an infilling at the basin. Extremely heterogeneous deformation of the rocks in the Cordillera occurred at this time. The most intense deformation occurred along the boundary between the marginal basin and the remnant arc, within a regional zone of progressive shear. (Auth. mod.)

E-21124
Olsen, E.J., Noonan, A., Fredriksson, K., Jarosewich, E., Moreland, G., **Eleven new meteorites from Antarctica, 1976-1977,** *Meteoritics,* June 30, 1978 13(2), p.209-225, 8 refs.

Basic petrographic, mineralogic, and chemical descriptions are given for all eleven meteorites recovered by the U.S.-Japan team in Antarctica during the austral summer 1976-1977. The meteorites are: Mt. Baldr a (H6), Mt. Baldr b (H6), Allan Hills 1 (L6), Allan Hills 2 (coarsest octahedrite, chemical group 1A), Allan Hills 3 (L6), Allan Hills 4 (LL3), Allan Hills 5 (eucrite), Allan Hills 6 (H6), Allan Hills 7 (L6), Allan Hills 8 (H6), and Allan Hills 9 (L6)). (Auth.)

E-21125
Yagi, K., Lovering, J.F., Shima, M., Okada, A., **Petrology of the Yamato meteorites (j), (k), (l), and (m) from Antarctica,** *Meteoritics,* Mar. 31, 1978 13(1), p.23-45, 22 refs.

The Yamato (j), (k), (l), and (m) meteorites collected from near the Yamato Mountains in Dec. 1973, are respectively an H-4 and L-5 chondrite, a howardite, and an L-5 chondrite. Yamato (l), the howardite, is a polymict breccia of diogenite and eucrite clasts. Olivine in the chondrites ranges in composition from Fo75 to Fo80, whereas in the howardite, where it is rare, the composition is about Fo60. Pyroxenes in the chondrites are mostly orthopyroxenes and (En83), while the pyroxenes in the howardite are more complex, comprising orthopyroxene, pigeonite, augite, and rare clinohypersthene (in the order of decreasing abundance), with the range from En80 to En37.

They form a definite trend, probably formed by the fractional crystallization of the parental magma of the achondrite, and later subjected to exsolution phenomena during the slow cooling. Plagioclase is high-temperature oligoclase in the chondrites, and anorthite in the howardite. Maskelynitization is sometimes observed. Other shock effects are also observed. Opaque phases consist mostly of nickel-iron, troilite, chromite, and rarely ilmenite. Intergrowth of these minerals are common. The accessory minerals comprise quartz, cristobalite, apatite, spinel, and rare uranium-bearing minerals. The bulk composition and genetic significance are discussed. (Auth.)

E-21126

Matsubaya, O., Sakai, H., Torii, T., Burton, H., Kerry, K., **Antarctic saline lakes—stable isotopic ratios, chemical compositions and evolution,** *Geochimica et cosmochimica acta,* Jan. 1979 43(1), p.7-25, 47 refs.

About 90 saline and fresh water lakes as well as glaciers and their melt waters from the ice-free areas of the Soya Coast, the Vestfold Hills and the Southern Victoria Land of Antarctica have been analyzed for hydrogen and oxygen isotopic ratios. These results and the chemical compositions so far published indicate four types of saline lakes. (1) Three saline lakes on the beaches of the first two areas are still receiving sea water as the major inflow. (2) Other lakes of these two areas are isolated from sea water inflow. The isotopic ratios of their waters are higher. (3) The west and east lobes of Lake Bonney are chemically stratified, but only the east lobe shows stratification in isotopic ratios. Both lobes started as shallow saline lakes similar to some of the saline lakes classified in (2). Fresh water flooding into the lakes and subsequent diffusion mixing formed the present features. (4) Lake Vanda is strongly stratified in both the salinity and isotopic ratios and seems to have a similar evolution history to the east lobe of Lake Bonney. Chemical compositions of the lakes in (2) and (3) differ variously from that of sea water but can be interpreted by different degrees of low temperature concentration of sea water by evaporation or freeze-drying. On the other hand, the high concentration of Ca2+ relative to Mg2+ and Na+ in the lakes of the Wright Valley cannot be interpreted in this way. (Auth. mod.)

E-21129

Nishiizumi, K., **Cosmic-ray-produced Mn-53 in thirty-one meteorites,** *Earth and planetary science letters,* Sep. 1978 41(1), p.91-100, 32 refs.

Cosmic-ray-produced Mn-53 has been determined by neutron activation analysis in twenty-two chondrites, including three antarctic meteorites: Yamato-7301 (j), -7305 (k) and 7304 (m). Mn-53 was also measured in four mesosiderites, three iron meteorites, Bencubbin and Udei Station. In addition, preliminary results for Be-10 were obtained in the Yamato meteorites, using a low-background needle GM counter. Based on published values of rare gas ages, corrections were made for undersaturation; the average specific saturation activities of Mn-53 were found in the range 450 dpm Mn-53/kg Fe in most of the condrites and 490 dpm Mn-53/kg Fe in the mesosiderites. Two meteorites had extremely low contents of Mn 53: 102 dpm Mn-53/kg Fe in Yamato-7301 and 48 in Bondoc. Several possible mechanisms are discussed to explain the low Mn 53 activity in Yamato-7301. (Auth. mod.)

E-21180

Kennett, J.P., **Late Cenozoic oxygen and carbon isotopic history and volcanic ash stratigraphy: DSDP Site 284, South Pacific,** *American journal of science,* Jan. 1979 279(1), p.52-69, 35 refs.

Oxygen and carbon isotopic analyses have been conducted on three planktonic foraminifera, *Globigerina quinqueloba, Globigerina bulloides,* and *Neogloboquadrina pachyderma;* a benthonic foraminifer, *Uvigerina;* and calcareous nanno-fossil assemblages at about 40 stratigraphic horizons in Late Cenozoic (Late Miocene to Recent), almost continuous deep-sea sequence in the southwest Pacific (DSDP site 284). The isotopic data is evaluated in terms of paleotemperature and paleoglacial history during the Late Cenozoic, particularly at times of major changes in antarctic ice volumes and in Northern Hemisphere ice sheets. Changes in the isotopic composition of *Uvigerina* primarily reflect known ice-volume changes in the polar regions. Oxygen isotopic changes in the planktonic foraminifera and calcareous nannofossils reflect oscillations in both polar ice-volume and temperature of near-surface waters. Except for *G. bulloides,* these changes correlate closely to the isotopic changes of *Uvigerina* and indicate four conspicuous episodes of surface-water cooling: (1) during the latest Miocene to earliest Pliocene, (2) briefly in the Middle Pliocene about 3.5 m.y. ago, (3) near the end of the Pliocene, and (4) during the Quaternary.

E-21195

Berggren, W.A., Van Couvering, J., **Late Neogene chronostratigraphy, biostratigraphy, biochronology and paleoclimatology,** *Woods Hole, Mass. Oceanographic Institution. Technical report,* June 1974 WHOI-73-40, 352p., AD-763 589, Numerous refs. For another version of this paper see E-14546.

The integration of modern paleomagnetic, radiometric, and biostratigraphic studies has provided an accurate geochronological framework for the past 10 million years years—the Late Neogene. Marine zones based on calcareous and siliceous planktonic organisms are recognized from the subarctic region to the subantarctic, and their correlation to the paleomagnetic time scale is now feasible in some detail for the past 5 m.y. Likewise, the relationship of geochemically calibrated mammalian biochronology to the marine succession has been greatly improved. Within this framework of time it is possible to delineate the history of major features in Late Neogene paleontology, climatology, and oceanography. (Auth.)

E-21215

Barrow, C.J., **Postglacial pollen diagrams from South Georgia (sub-Antarctic) and West Falkland Island (South Atlantic),** *Journal of biogeography,* Sep. 1978 5(3), p.251-274, Refs. p.272-274.

Six pollen diagrams are presented, five from South Georgia, and one from near Port Howard, West Falkland Island. These diagrams are the first published for either island. In South Georgia and the Falkland Islands, conditions seem to have ameliorated by c. 10,000 yr B.P., and peat then began to accumulate. Many elements of the present vascular flora of South Georgia and West Falkland Island were flourishing before 9500 yr B.P., having in South Georgia possibly survived the last glacial (approx 20,000-10,000 yr B.P.) in low altitude refugia. Post glacial conditions have not prevented South Georgia plants from flowering, and the Neoglacia (c. 5000-4500 yr B.P.) is thus not clearly indicated. Surface litter analyses are related to percentage cover of vegetation. Pollen blown from South America may attain 3.0% of the native pollen in South Georgia peat and up to 2.8% in West Falkland Island deposits. There are no indications from West Falkland Island that trees grew in the Falkland Islands during the postglacial (i.e., the last c. 10,000 yr). The distribution of peat deposits in South Georgia hints at postglacial sea level changes, which may have altered the quantity of postglacial coastal tussock *(Poa flabellata)* pollen deposited in the peat. (Auth.)

E-21216

Littlefair, M.J., **Quartz-pyrite rocks of the South Shetland Islands, western Antarctic Peninsula,** *Economic geology,* Sep.-Oct. 1978 73(6), p.1184-1189, 10 refs.

During the 1975-76 summer season quartz-pyrite rocks were studied in the field and laboratory, leading to theory of their nature and origin. Three different alteration types have been distinguished, namely advanced argillic, intermediate argillic and phyllic, although

compositionally the rocks form similar suites. These quartz-pyrite rocks are areas of hydrothermally altered andesitic lavas and tuffs and not lodes, as previously supposed. Probably of low-temperature epithermal-solfataric derivation, these deposits are possibly the surface expression of ore deposits at depth.

E-21224

Hawkesworth, C.J., **Nd-143/Nd-144, Sr-87/Sr-86, and incompatible element variations in calc-alkaline andesites and plateau lavas from South America,** *Earth and planetary science letters,* Jan. 1979 42(1), p.45-57, 34 refs.

Trace element, Sr and Nd isotope data on Andean calc-alkaline andesites and plateau basalts from Patagonia are presented. The available results from many island-arc and continental margin volcanic rocks reveal a displacement in Sr-87/Sr-86 relative to the coherent variation of Nd-143/Nd-144 and Sr-87/Sr-86 in most continental and oceanic lavas. Comparative Nd vs Sr isotope results are presented for Patagonian lavas, Ecuadorian andesites, North Chilean andesites, South Sandwich I. basalts, and Scotia Sea basalts. The available data are briefly evaluated, and a model is discussed whereby Rb, K, and Sr are preferentially released in H2O-rich fluids from the downgoing slab as a result of dehydration. Depending on the amount and composition of the Sr, both in the overriding lithosphere and released from the slab, this will variously affect the geochemistry of the resultant volcanics.

E-21231

Ben-Avraham, Z., **Evolution of marginal basins and adjacent shelves in east and southeast Asia,** *Tectonophysics,* Mar. 3, 1978 45(4), p.269-288, Refs. p.286-288.

The structural elements on the shallow (Sunda Shelf) and deep seas of east and southeast Asia are interpreted as the result of past interaction between lithospheric plates. During the Mesozoic, the western Pacific Ocean and the eastern Indian Ocean were parts of the Tethys Sea and were moving to the north relative to Antarctica. A Mesozoic ridge system trending east-west produced east-west trending magnetic anomalies throughout the entire area. The ridge system was bisected by large north-south transform faults which divided the wastern Indian Ocean-Western Pacific Ocean into sub-plates traveling at different speeds. The Mesozoic evolution of the Sunda Shelf and the deep seas resulted from such horizontal differential movement in a north-south direction. (Auth. mod.)

E-21235

Scott, W.E., **Energy search turns to Antarctic,** *Energy international,* June 1978 15(6), p.17-20.

In anticipation of a decline in energy reserves, several nations, including Australia, New Zealand, and the U.S. are turning their attention to Antarctica. First moves have already been made to test for oil and gas in the regions south of New Zealand, using subantarctic islands as offshore bases, and the first well is being planned for this region. Antarctic resources can be expected to occur in four areas: on ice surfaces such as mountain tops projecting through the ice, under the ice surface as an integral part of the land mass below, in the sea, and on or under the sea bed. The techniques and equipment required to exploit Antarctica's energy resources and the logistics problems associated with resource exploitation are discussed.

E-21238

Howell, L.W., Jr., Krutchkoff, R.G., Parker, B.C., **Development and use of a mathematical model for an antarctic lake,** *Hydrobiologia,* Aug. 18, 1978 60(2), p.129-134, 16 refs.

The authors describe the development and use of the first mathematical computer model for a polar lake. This dynamic model graphically illustrates seasonal and annual predictions of the changes in the biomass of plankton and attached primary producers, decomposers and consumers, changes in the quantities of potential nutrients and organic matter. The model consists of 100 sub-models of which 79 are algebraic equations and 21 are differential equations. It has proven valuable as a means of identifying voids in the limnological program and probable errors in field measurements. (Auth.)

E-21239

Kyle, P.R., Jezek, P.A., **Compositions of three tephra layers from the Byrd Station ice core, Antarctica,** *Journal of volcanology and geothermal research,* Dec. 1978 4(3/4), p.225-232, 12 refs.

Volcanic glass shards from three tephra layers at 788, 1457, 1711 m depth in the 2164-m Byrd Station ice core from the West Antarctic Ice Sheet were analyzed by electron microprobe. Glass shards within each tephra layer are homogeneous and have peralkaline trachyte compositions. Mt. Takahe, 450 km north-northwest of the drill site, is considered the most likely eruptive source, although Toney Mountain, 460 km to the north, is also a possible source. Tephra layers in ice cores from the West Antarctic ice sheet may offer a valuable tool for stratigraphic correlation. (Auth.)

E-21248

Veevers, J.J., Rundle, A.S., **Channel Country fluvial sands and associated facies of central-eastern Australia: modern analogues of Mesozoic desert sands of South America,** *Palaeogeography, palaeoclimatology, palaeoecology,* Feb. 1979 26(1/2), p.1-16, Refs. p.14-16.

The sediment distribution and drainage pattern of the Channel Country were studied. With the other sediments (aeolian sand and lacustrine mud) of the Lake Eyre drainage basin, the Channel Country sediments represent the latest phase of deposition of the Cainozoic Birdsville Basin. In their depositional and tectonic setting, the arid sediments of central-eastern Australia are modern analogs of the Mesozoic desert sands and other non-marine sediments that were deposited behind the pre-breakup arch and post-breakup half-arch of South America. The preceding Mesozoic Great Artesian Basin of central-eastern Australia contains volcanogenic sediment and was covered for a short time by an epeiric sea; its deposition was influenced by an uplift along the convergent Pacific margin, and it is analogous to other Gondwana basins in Antarctica, southern Africa, and South America that were yoked to the convergent Pacific margin.

E-21257

Ford, A.B., Schmidt, D.L., Boyd, W.W., Jr., Nelson, W.H., **Geology of the Saratoga Table quadrangle, Pensacola Mountains, Antarctica,** U.S. Geological Survey. Antarctic Research Program Map. Map A-9, Washington, D.C., 1978, 9p. + map, Refs. p.8-9.

This 1:250,000 scale map of the Saratoga Table is accompanied by a text outlining geologic relations and reviewing geologic, geophysical, and paleomagnetic studies of the quadrangle and adjacent regions. The major geologic feature of the quadrangle is the south end of the Dufek intrusion.

E-21258

Ford, A.B., Schmidt, D.L., Boyd, W.W., Jr., **Geology of the Davis Valley quadrangle and part of the Cordiner Peaks quadrangle, Pensacola Mountains, Antarctica,** U.S. Geological Survey. Antarctic Research Program Map. Map A-10, Washington, D.C., 1978, 10p. + map, 7 refs.

This 1:250,000 scale map of the Davis Valley and Cordiner Peaks quadrangles is accompanied by a 10-page text with 49 refs., outlining geologic relations and reviewing geologic, geophysical, and paleomagnetic studies of the area and adjacent regions. The major geologic

feature of the area shown on the map is the northern part of the Dufek intrusion.

E-21286

Dalziel, I.W.D., **Sub-antarctic islands,** Encyclopedia of Earth Sciences, Vol.8. The Encyclopedia of World Regional Geology, Part 1: Western Hemisphere (including Antarctica and Australia). Edited by R. W. Fairbridge, Stroudsburg, Pa., Dowden, Hutchinson and Ross, Inc., 1975, p.465-480, 17 refs.

DLC QE5.F33

The geology of the islands south of 35S and relatively remote from continental crustal masses is described. They fall into four groups: islands on the Scotia Ridge that bathymetrically joins South America, islands on seismically active ridges of the southern Atlantic, Indian, and Pacific Oceans, islands on aseismic plateaus in the southern Indian and Pacific Oceans, and those on the continental shelf of Antarctica.

E-21287

Elthon, D., Stern, C., **Metamorphic petrology of the Sarmiento ophiolite complex, Chile,** *Geology,* Aug. 1978 6(8), p.464-468, 9 refs.

The Sarmiento Complex of southern Chile is a Mesozoic ophiolite that underwent hydrothermal "ocean-floor metamorphism" prior to its uplift and exposure in the Andean Cordillera. The overprint of this metamorphism exhibits a steep vertical metamorphic gradient, although the extent of metamorphic replacement decreases markedly within the gabbro unit of the complex, probably because of restricted access of circulating seawater at deeper levels of the complex. Even for rocks of the same facies, pseudostratigraphic variations in the proportions of major metamorphic minerals and the presence or absence of accessory phases such as biotite, magnetite, ilmenite, and orthoclase indicate that conditions other than the temperature of metamorphism, particularly $fO2$, varied pseudostratigraphically. Detailed textural, mineralogical, and geochemical studies indicate that ocean floor metamorphism is a complicated interaction between the various rock units that make up the igneous pseudostratigraphy of the ocean floor and circulating seawater; the interaction is strongly dependent on $PH2O$ and the thermal gradient. (Auth.)

E-21288

Jurdy, D.M., **Alternative model for early Tertiary absolute plate motions,** *Geology,* Aug. 1978 6(8), p.469-472, 7 refs.

The absolute plate motions for early Tertiary time are reconsidered. The no-net-torque determination of Solomon and others indicated absolute plate motions at 55 m.y. ago that were considerably different from the present motions. To test whether these motions are truly characteristic of early Tertiary time or merely a consequence of uncertainties, an alternative model for the relative motions is considered. A single major change is made in the relative motions scheme: Antarctica is treated as two plates. The role of Antarctica is particularly important in the relative motion scheme because it is the sole link between the large Pacific Ocean plates and the other, largely continental plates. Although this relative plate motion model for early Tertiary time does not yield absolute motions that are compatible with those of the present, there are considerable differences from Solomon and others' determination. Thus, past relative plate motions must be further constrained to give absolute motions that can confidently be compared to the present set and used in testing hypotheses about driving forces. (Auth.)

E-21319

Saunders, A.D., Tarney, J., Stern, C.R., Dalziel, I.W.D., **Geochemistry of Mesozoic marginal basin floor igneous rocks from southern Chile,** *Geological Society of America. Bulletin, Part 1,* Mar. 1979 90(3), p.237-258, Refs. p.256-258.

This research forms part of a continuing program to study the tectonic evolution of the Antarctic Peninsula, the subantarctic islands of the Scotia arc and the southernmost Andes. Extension behind a Late Jurassic continental margin volcanic arc in southern Chile caused rifting and the development of a narrow marginal basin floored by oceanic crust. Extension ceased and the basin was closed and uplifted in mid-Cretaceous time, so the basin floor is now exposed as the upper part of an autochthonous ophiolite complex composed of gabbros, sheeted dikes, and pillow lavas, with minor plagiogranite and associated siliceous dikes. Geochemically, the rocks have affinities with mid-oceanic ridge basalts, but K, Rb, and Ba contents and Ba/Sr and Ce/Yb ratios are higher and K/Rb ratios are lower in the least altered rocks than in mid-oceanic ridge basalts. Similar features are apparent in some other marginal basin basalts. (Auth. mod.)

E-21320

Dalziel, I.W.D., Palmer, K.F., **Progressive deformation and orogenic uplift at the southern extremity of the Andes,** *Geological Society of America. Bulletin, Part 1,* Mar. 1979 90(3), p.259-280, Refs. p.279-280.

This study forms part of a continuing program to investigate the tectonic evolution of the Antarctic Peninsula, the subantarctic islands of the Scotia Arc and the southernmost Andes. The Middle to Upper Jurassic and Lower Cretaceous silicic volcanic and sedimentary rocks of Isla de los Estados, Argentina, at the southern extremity of the Andean Cordillera, have been interpreted to lie on the rear (continental) side of an Early Cretaceous marginal basin. Detailed structural analysis shows that the rocks of Isla de los Estados are disposed in a major asymmetric, noncylindrical syncline. The island, nearly 1,000 m high, lies in the core of this fold. The structures are all interpreted to be the result of progressive deformation of the rocks during a single period of regional compression. The sequence of strains correlates closely with that deduced from theoretical and experimental studies of buckling. The dominant northward vergence of the structures undoubtedly reflects the uplift of the Pacific margin of the continent. The crustal thickening resulting from the horizontal shortening and the buckling seems to have played a major role in the mid-Cretaceous orogenic uplift of the southernmost part of the Andean Cordillera. (Auth. mod.)

E-21327

Dalziel, I.W.D., De Wit, M.J., Palmer, K.F., **Fossil marginal basin in the southern Andes,** *Nature,* July 26, 1974 250(5464), p.291-294, 34 refs.

In the southern part of the South American continent a marginal basin opened behind an active andesitic island arc in the earliest Cretaceous. The basin closed again in the middle Cretaceous, during the seafloor spreading, causing the penetrative deformation of the southern Andean Cordillera. (Auth.)

E-21328

De Wit, M.J., Stern, C.R., **Model for ocean-floor metamorphism, seismic layering and magnetism,** *Nature,* Dec. 16, 1976 264(5587), p.615-619, 38 refs.

Ocean-floor metamorphism, which overprints the pseudo-stratigraphy of ophiolite complexes in southern Chile, is best explained by a combination of hydrothermal and contact metamorphism associated with igneous activity at a spreading center. Such metamorphism may be more important than igneous processes in producing the observed seismic layering and magnetic properties of the ocean floor.

E-21329
Johnson, L., **Report on an archaeological expedition in Magallanes (Dec. 14, 1976—Jan. 6, 1977)** [Informe sobre una prospección arqueológica en Magallanes (14 diciembre 1976—6 enero 1977)], *Punta Arenas (Chile). Instituto de la Patagonia. Anales,* 1976 Vol.7, p.87-94, In Spanish with English summary. 5 refs.

A four-week survey of Magallanes was carried out with the aim of formulating an eco-geo-archaeological equation to aid in planning further work in the area. Eighteen sites were found, all of which were located in areas of geological uplift where vegetation had been relatively open forest. No sites were found where geological formations sank, had poor drainage and heavy, mossy cover. Dating the archaeological finds should aid in determining when uplifting occurred. Shell middens differ markedly in their shell content. Whether these differences represent the effect of temporal or climatic change, the eating preferences of the natives, or a combination of these factors needs further study.

E-21330
Stern, C., De Wit, M.J., Lawrence, J.R., **Igneous and metamorphic processes associated with the formation of Chilean ophiolites and their implication for ocean floor metamorphism, seismic layering, and magnetism,** *Journal of geophysical research,* Aug. 10, 1976 81(23), p.4370-4380, 54 refs.

This paper describes the overprint of metamorphism on the pseudostratigraphy of an ophiolite complex in southern Chile. The metamorphism increases in grade from the pillow lavas downward to their maximum intensity within the gabbro layer, then disappears abruptly. This suggests that the metamorphism in these as well as other ophiolites and in the ocean floor is better explained by hydrothermal and contact metamorphism associated with circulation of seawater and igneous and tectonic processes at a spreading ridge than by a model of burial metamorphism. It is believed that the effects of this special type of metamorphism in the upper parts of the oceanic crust may be more important in producing the geophysical properties of this part of the oceanic crust than the primary igneous processes at spreading ridges. (Auth.)

E-21331
Stern, C., Skewes, M.A., Duran, A.M., **Orogenic volcanism in Southern Chile** [Volcanismo orogenico en Chile austral], Geologic Congress of Chile. Proceedings, 1st, Santiago, Chile, Aug. 1976, p.195-212, In Spanish with English summary. 24 refs.

The Maca and Cay volcanos at 45S consist dominantly of olivine bearing basalts similar to many volcanos in Central-South Chile. However hornblende bearing dacites are found at Cay. In contrast, Mt. Burney, the more southerly calc-alkaline volcano in Chile at 52S, consists dominantly of two piroxenes andesites with minor hornblende in various stage of break-down to crystal clots of piroxenes, plagioclase and magnetite. A model for the origin of Mt. Burney andesites is presented based on REE and other trace elements geochemistry. The difference between calc-alkaline volcanism at 45 and 52S is discussed in terms of tectonic differences. (Auth.)

E-21332
Tarney, J., Dalziel, I.W.D., De Wit, M.J., **Marginal basin "rocas verdes" complex from S. Chile: a model for Archaean greenstone belt formation,** Early history of the earth, ed. by B.F. Windley, London, Wiley, 1976, p.131-146, Refs. p.131-146.

The "rocas verdes" marginal basin began to develop along the Pacific margin of southern South America in the late Jurassic-early Cretaceous. Continued expansion of the marginal basin was interrupted during the mid-Cretaceous, and uplift associated with deformation along the Pacific margin was accomplished by the late Cretaceous, preserving the relationships. An outline of the characteristics of marginal basins, using modern-day examples from the Western Pacific and an overview of the mechanisms by which marginal basins are believed to form, reveals that marginal basins provide an actualistic counterpart to Archaean greenstone belts. Taking into account the higher geothermal gradient in the Archaean, with its influence on lithospheric plate size and thickness plate subduction and nature of the crust-mantle interface, a reasonable geotectonic model for Archaean greenstone belts is possible which is also reconcilable with the geochemical features of the associated rock types.

E-21333
Bruhn, R.L., Stern, C.R., De Wit, M.J., **Field and geochemical data bearing on the development of a Mesozoic volcano-tectonic rift zone and back-arc basin in southernmost South America,** *Earth and planetary science letters,* Sep. 1978 41(1), p.32-46, 52 refs.

A broad zone of dominantly subaerial silicic volcanism associated with regional extensional faulting developed in southern South America during the Middle Jurassic, contemporaneously with the initiation of plutonism along the present Pacific continental margin. Stratigraphic variations observed in cross sections through the silicic Jurassic volcanics along the Pacific margin of southernmost South America indicate that this region of the rift zone developed as volcanism continued during faulting, subsidence and marine inundation. A deep, fault-bounded submarine trough formed near the Pacific margin of the southern part of the volcano-tectonic rift zone during the Late Jurassic. Tholeiitic magma intruded within the trough formed the mafic portion of the floor of this down-faulted basin. During the Early Cretaceous this basin separated an active calc-alkaline volcanic arc, founded on a sliver of continental crust, from the then volcanically quiescent South American continent. Geochemical data suggest that the Jurassic silicic volcanics along the Pacific margin of the volcano-tectonic rift zone were derived by crustal anatexis. The igneous and tectonic processes responsible for the development of the volcano-tectonic rift zone and the subsequent back-arc basin are attributed to diapirism in the upper mantle beneath southern South America. (Auth. mod.)

E-21334
De Wit, M.J., Stern, C., **Pillow talk,** *Journal of volcanology and geothermal research,* Aug. 1978 4(1/2), p.55-80, Refs. p.77-80.

Three distinct types of pillows and pillow lava sequences with different modes of origin have been recognized in the extrusive sequences comprising the upper parts of ophiolite complexes that represent the mafic portion of the floor of an Early Cretaceous back-arc basin in southern Chile. One type of pillow formed by non-explosive submarine effusion. A second type formed by magmatic intrusion into pre-existing aquagene tuff formed by explosive eruption. The third type of pillow occurs within dikes, forming pillowed dikes, possibly as a result of vapor streaming within a cooling dike. This paper attempts to relate changes in the relative abundance of these different types of pillows to changes in some of the tectonic factors that influence the formation of ophiolites, specifically rate of extension relative to rate of magma supply. The observations in southern Chile suggest that ophiolites which contain a great abundance of aquagene tuffs and intrusive pillow lavas formed in tectonic environments in which the rate of extension was small relative to the rate of magma supply (island arcs, embryonic marginal basins). Ophiolites with predominantly water-lain pillowed and massive lavas formed in tectonic environments in which the rate of extension was large relative to the rate of magma supply (mid-ocean ridges, mature back-arc basins). Thus

geologic field data may supplement geochemical data as a tool in distinguishing the original igneous-tectonic environments in which ophiolites originate.

E-21335
Nelson, E., Forsythe, R., Hervé, F., Suárez, M., Valenzuela, E., Wilson, T., **Structural observations in the Darwin Mountains, Antarctica and Tierra del Fuego: 77-4 Cruise of the r/v *Hero*** [Observaciones estructurales en la cordillera Darwin, provincias Antártica y de Tierra del Fuego: crucero 77-4 del r/v *Hero*], *Notas cientificas. Comunicaciones,* Nov. 1977 No.21, p.32-35, In Spanish. 3 refs.

Detailed studies were made of the coastal outcrops along the Antarctic Peninsula, in the Darwin Mountains and Tierra del Fuego. Directional distribution of geologic structures in the area is very complex, and there is a wide variety of types of folds. Many samples were taken and will be subjected to detailed petrographic, paleogeographic and stratigraphic analysis to shed light on this extremely complex region.

E-21338
Thom, G., **Disruption of bedrock by the growth and collapse of ice lenses,** *Journal of glaciology,* 1978 20(84), p.571-575, In English with French and German summaries. 3 refs.

Hummocks and hollows were found developed in bedrock in the South Shetland Islands, Antarctica. Excavation revealed an ice lens 60 cm thick beneath a hummock. A cycle for the formation of the hummocks and hollows by the growth and collapse of ice lenses is suggested. (Auth.)

E-21354
Vucetich, C.G., Robinson, P.H., **Quaternary stratigraphy and glacial history of the Lower Taylor Valley, Antarctica,** *New Zealand journal of geology and geophysics,* 1978 21(4), p.467-482, 21 refs.

Well-bedded glacioaqueous sediments exposed in Lower Taylor Valley meltwater streams are informally defined as lithofacies by texture and lithology, and assigned to chronozones. One lithologically distinct marker, the Basalt Granule Bed, is particularly useful in assigning Chronozone III Thick-bedded Facies within Lake Fryxell Basin to the latest proglacial lake episode. Early Chronozone III Interbed Facies (lake marginal) is well exposed together with older sediments in New Harbour Stream. Chronozone II Sand Facies was deposited on a previous shoreline and Chronozone I, interbedded clayey silt and sand, was deposited marginal to a still older lake. Chronozone I, II, and III sediments are provisionally correlated with the upper units (Units 1, 2, 3) of DVDP II. All three depositional episodes are consequent on grounding of ice within New Harbour. Chronozones I and II are provisionally assigned to Ross Sea Glaciation II; Chronozone III is assigned to Ross Sea Glaciation I, during which coarse detritus including basalt was transported across the ridge threshold into Lake Fryxell Basin. Chronozone III terminated 10,000 years ago. (Auth.)

E-21384
Bardin, V.I., **Glacial geomorphology of the Lambert Glacier and its surrounding mountains,** *Polar geography,* Oct.-Dec. 1977 1(4), p.251-269, For Russian original see E-15875. 30 refs.

Results of glacial-geomorphic observations in the area of the Lambert Glacier, the largest outlet glacier in Antarctica, are reviewed. The basic types of glacial forms and bedrock relief are described, and attention is focused on the widespread development of preglacial planation surfaces. The principal stages of landform development are traced. (Auth.)

E-21483
Clark, D.B., **Trace element chemistry of the Kirkpatrick basalt, Storm Peak, Central Transantarctic Mountains,** Columbus, Ohio State University, 1974, 117p., Master's thesis. Refs. p.111-117.

The study of trace elements, particularly in conjunction with data on the initial Sr-87/Sr-86 ratios, has been shown to be an effective method of evaluating petrologic processes in a succession of lava flows. The results reported in this study show that the Kirkpatrick Basalt on Storm Peak has distinctive trace element abundances and adds tot the geochemical data on this possibly unique petrologic province. The trace element concentrations are also consistent with the hypothesis of contamination of basaltic magma by granitic material. Whether contamination was by partial or complete assimilation of granitic material is not yet clear. The hypothesis of four eruptive cycles being represented by the flows on Storm Peak is generally supported by this study. Trace element distributions are commonly influenced, as would be expected, by the major oxide trends. Of all the elements studied, only Co did not yield any definitive information.

E-21484
Shaffer, N.R., **Regional distribution of Sr-87/Sr-86 ratios and mixing of sediments in the Ross Sea, Antarctica,** Columbus, Ohio State University, 1974, 139p., Master's thesis. Refs. p.126-135.

Regional patterns of concentrations and isotopic ratios of strontium in the detrital silicate fraction of sediment suggest a subdivision of the Ross Sea into three general areas. These general patterns can be related to the provenance of the sediment modified by mixing different types of sediment. Sediments having high strontium concentrations and low Sr-87/Sr-86 ratios are found in a region extending along the coast of Victoria Land from Ross Island to Cape Adare. Low strontium contents and high isotopic ratios characterize sediments collected near the Ross Ice Shelf. A third sediment type with intermediate strontium concentrations and Sr-87/Sr-86 ratios is found near Marie Byrd Land. Sediment mixing was analyzed using a two-component model. The tendency for samples to show linear relationships between Sr-87/Sr-86 ratios and strontium concentrations indicates that mixing of different types of sediment is occurring within each area. Use of regional patterns of strontium concentrations and Sr-87/Sr-86 ratios for determining sources and mixing regimes of non-carbonate sediment may have applications in other areas as well as the Ross Sea. (Auth. mod.)

E-21485
Fasola, A., **Palynological study of triassic samples from the Beardmore Glacier area in Antarctica,** Columbus, Ohio State University, 1974, 163p., Master's thesis. Refs. p.119-130.

Palynologic assemblages obtained from Fremouw and Falla formation in six localities in the Fremouw Peak area include abundant bisaccate anacolpate pollen. An assemblage from the base of the upper third of Fremouw Formation containing *Cadargasporites senectus, Aratrisporites parvispinosus, Verrucosisporites carnarvonensis,* and others, is correlated with Australian assemblages which indirectly have been assigned to the Landinian Stage. This age is consistent with previous determinations for the Falla Formation (isotopic) and for the base of Fremouw Formation (vertebrates). The best preserved specimens of bisaccate pollen are found in samples of silicified peat. Four species of bisaccate pollen are described in detail and, based on morphological features and biometric procedures are assigned to *Pityosporites antarcticus, P.* sp. A, *P. argentinus,* and *Klausipollenites parvus* (new combination). The individuals assigned to

Pityosporites are believed to be related to *Pteruchus* and *Dicroidium*. Anacolpate species from the Southern Hemisphere previously assigned to *Falcisporites* and *Alisporites* are thought to be synonymous with *Pityosporites*. *Platysaccus queenslandi* is perhaps an abortive form of bisaccate anacolpate pollen. (Auth.)

E-21495

Plume, R.W., **Stratigraphy, petrology and sedimentology of the New Mountain sandstone at Plane Table, Asgard Range, South Victoria Land, Antarctica,** Unpublished ms., 1974, 54p., Available from Goldthwait Polar Library, Ohio State University. Refs. p.51-54.

Various aspects of a small outcrop of New Mountain Sandstone, the basal formation of the Beacon Supergroup, are presented. The basal members of the sequence exposed at Plane Table appear to represent a lacustrinal or enclosed shallow marine environment. These basal sediments are overlain by a thick sequence of west trending, large scale cross beds in an arkosic sandstone. The character of the sedimentary structures and field relationships suggest that the sequence represents a marine transgression. The distinctive coloring of the black siltstone facies rocks is shown to be due to the presence of hematite. (Auth.)

E-21497

Grew, E.S., **Petrologic study of the granulite-facies metamorphic rocks of Enderby Land, East Antarctica, with the Australian National Antarctic Research Expedition (ANARE), 1977-78,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.2-3, 3 refs.

Petrologic study of high-grade Precambrian metamorphic rocks in Enderby Land that contain the assemblages sapphirine-quartz and orthopyroxene-sillimanite-quartz is reported. The major rock types exposed in the central part of Enderby Land are charnockitic gneiss, pyroxene gneisses, leucocratic granitic gneisses, quartzofeldspathic pelitic geneisses containing sillimanite or garnet, and quartzite. Charnockitic gneiss, the most widespread and abundant rock rock type, was found at all localities; mafic pyroxene-plagioclase gneisses, although less abundant, are equally widespread. Examples of sapphirine-bearing rocks found at Spot Height, Mounts Hardy and Torckler, Forefinger Point, Beaver Island, and Gage Ridge are briefly described.

E-21498

Stump, E., **Geological investigations in the Leverett Glacier area,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.3-4, 5 refs.

The object of the 1977-78 geological investigations in the Leverett Glacier area was to record the occurrence and geological history of the rocks and to relate these to sequences elsewhere in the Queen Maud Mountains studied previously by Stump (1976;E-18893). As had been predicted from earlier descriptions, the rocks are pre-Ross Orogeny, belonging to the so-called basement of the Transantarctic Mountains. Metamorphic and igneous types occur with both variety and abundance. Geological sequences in the Harold Byrd Mountains, at Phleger Dome, at Mt. Webster, and in the Bender Mountains are briefly described.

E-21499

Wade, F.A., **Geologic survey of Ruppert-Hobbs Coasts sector, Marie Byrd Land,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.4-5, 1 ref.

The scientific investigations in the Ruppert-Hobbs Coasts sector of Marie Byrd Land included the following programs: detailed geologic survey of the Hobbs Coast sector; study of the volcanic history of Marie Byrd Land; study to determine if the West Antarctic Ice Sheet is disintegrating; a resource and radioactivity survey using airborne gamma ray spectrometry; and study of terrestrial arthropods. The most exciting event of the field season was the discovery of plant fossils at Milan Rock.

E-21500

Metcalfe, A.P., Spörli, K.B., Craddock, C., **Plutonic rocks from the Ruppert Coast, West Antarctica,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.5-7, 10 refs.

Forty-six specimens of granitic and gabbroic rocks from the Ruppert Coast have been analyzed for 10 major elements by X-ray fluorescence and atomic absorption spectrometry techniques. Five main plutonic rock suites have been distinguished and are described: layered gabbro at Cape Burks, Mt. Giles, and northern Mt. Gray; foliated granodiorites and quartz diorites at Mts. Gray, Steinfeld, and Vance; alkali synenite-alkali granite at Mt. Gray; quartz monzonite and granitic rocks west of Coulter Point; and garnet-two-mica granite at Mt. Shirley.

E-21501

Rowley, P.D., **Geologic studies in Orville Coast and eastern Ellsworth Land, Antarctic Peninsula,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.7-9, 6 refs.

Reconnaissance geologic mapping of about 30,000 sq km was completed during the 1977-78 austral summer in the Orville Coast. The geology of the Orville Coast has many similarities to the geology of the Lassiter Coast and eastern Ellsworth Land. The oldest exposed rocks in the area are the predominantly sedimentary Latady Formation, which is locally interbedded with volcanic rocks. The geology of the formation is described. A small noneconomic porphyry-type copper deposit was discovered in an Andean granodiorite stock in the southeastern Sky-Hi Nunataks.

E-21502

Thomson, M.R.A., Laudon, T.S., Boyles, J.M., **Stratigraphical studies in Orville Coast and eastern Ellsworth Land,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.9-10, 10 refs.

The 1977-78 geological reconnaissance of Orville Coast and eastern Ellsworth Land indicated that most of this area is underlain by sedimentary rocks of the Latady Formation In most places the Latady Formation consists of fine- to medium-grained sandstone and subordinate siltstone and shale. Fossils occur sporadically throughout the sequence and are locally abundant. The marine faunas are dominantly molluscan, and large collections were made, notably in the Hauberg Mountains. Fossil floras, as well as the invertebrate faunas, also were obtained from the Behrendt Mountains and northern Sweeney Mountains. The bulk of the faunas are Late Jurassic in age.

E-21503

Dalziel, I.W.D., **Scotia Arc Tectonics Project, 1977-78,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.10, 1 ref.

1977-78 field work on the Scotia Arc Tectonics Project was conducted by scientists from Lamont-Doherty Geological Observatory at the South Shetland Is., Cordillera Darwin, Tierra del Fuego, in the Andean foothills, of the Magallanes Province, and the Patagonian coastal cordillera, Chile. Studies are briefly outlined.

E-21504

Forsythe, R.D., **Geologic reconnaissance of the Pre-Late Jurassic basement: Patagonian Andes,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.10-12, 10 refs.

As part of the continuing study of the structural and tectonic history of the Scotia Arc, field work has been done to define the regional geologic framework of the Pre-Late Jurassic basement. The basement forms an almost continuous belt of exposure from 47S to

54S along the outer belt of islands that comprise the southern Chilean archipelago. The islands containing basement exposures that have thus far been investigated are Desolacion, Donas, Madre de Dios, and Duque de York. The geology of these regions is described. The results corroborate the hypothesis suggested earlier that this region represents a fore-arc, arc-trench-gap assemblage of late Paleozoic to early Mesozoic age.

E-21505

Elliot, D.H., Watts, D.R., Alley, R.B., Gracanin, T.M., **Geologic studies in the northern Antarctic Peninsula, R/V Hero cruise 78-1B, February 1978,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.12-13, 9 refs.

These studies focused on 1) establishing the relationship between the Mesozoic sedimentary and volcanic rocks that crop out on Joinville I. and at Hope Bay and the evolution of the Antarctic Cordillera, and 2) collecting samples for paleomagnetic study to establish the position of the northern Antarctic Peninsula relative to South America and the east antarctic craton during the late Mesozoic and early Cenozoic.

E-21506

Brady, H.T., **Geological studies in southern Victoria Land, on Black Island, and on the McMurdo Ice Shelf,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.13-14, 7 refs.

Research is summarized on an ancient tillite at Mt. Feather, marine diatom and silicoflagellate floras collected on the shore of Lake Vanda, and a mirabilite deposit discovered on the McMurdo Ice Shelf along a 1-km line parallel to the eastern shore of Black I. Samples were also collected from sites on the McMurdo Ice Shelf for investigations of living algae.

E-21507

Nagata, T., **Japanese scientific activities in Victoria Land 1977-1978,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.14-15, 2 refs.

Japanese scientific activities in Victoria Land during the austral summer field season of 1977-1978 included a geological survey of dike rocks in the dry valley area, sampling of typical rock specimens for paleomagnetic studies, and the continued search for antarctic meteorites. A U.S.-Japan team recovered 311 individual specimens.

E-21508

Vocke, R.D., Jr., Hanson, G.N., Stuckless, J.S., **Ages for the vida granite and olympus granite gneiss, Victoria Valley, southern Victoria Land,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.15-17, 5 refs.

The vida granite and olympus granite gneiss in basement rocks of the Victoria Valley were dated using the fission track method for zircons and apatites and the U-Pb method for zircons. The vida granite was also analyzed for major elements, rare earth elements, and barium. The studies indicate a component to the crust in this region that is older than 950 m.y. and may be Archean. If the analyzed zircons in the gneiss are detrital, this older component may be the provenance for these zircons. If the zircons formed *in situ,* the 2,555 m.y. age may date an event that affected the gneiss. It is also demonstrated that partial melting of ancient metasedimentary rocks is a plausible source for the vida granite.

E-21509

Kovach, J., Faure, G., **Rubidium-strontium geochronology of granitic rocks from Mt. Chapman, Whitmore Mountains, West Antarctica,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.17-18, 7 refs.

Preliminary Ru-Sr age determinations are reported for whole-rock samples and mineral separates from a fine-grained equigranular granite and a coarsely crystalline, porphyritic granite from Mt. Chapman in the Whitmore Mountains. The results indicate a date of 173 m.y. and an initial Sr-87/Sr-86 ratio of 0.7148. The date is identical to the age of the Linck Nunataks granite reported by Webers and others (in press) and supports correlation with the fine-grained phase on Mt. Chapman. The Jurassic age of 173 m.y. and elevated initial Sr-87/Sr-86 ratio of the granitic works in the Whitmore Mountains are also similar to those of the Kirkpatrick basalt and the Ferrar dolerite.

E-21510

Askin, R.A., Schopf, J.M., **Palynologic studies in the Transantarctic Mountains,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.18-19, 4 refs.

Palynological studies in the Transantarctic Mountains indicate a relatively precise correlation with the closely similar palynologic succession of eastern Australia. The results also indicate some conclusions regarding correlation of Victoria Group units along the Transantarctic Mountains which do not agree with previous correlations.

E-21511

Tasch, P., **Permian palynomorphs (Coalsack Bluff, Mt. Sirius, Mt. Picciotto) and other studies,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.19-20, 4 refs.

Some 7,155 palynomorphs (pollen and spores), an average of 795 per sample, have been recovered from Coalsack Bluff, Mt. Sirius and Mt. Picciotto. Correlation of the palynomorphs with eastern Australian basins is likely. Findings allow correlation of the Mt. Sirius section (northeast face) with the Coalsack Bluff section, below the Bone Bed in the Triassic Fremouw Formation. Fossil conchostracans from antarctic Jurassic interbeds (Blizzard Heights) were found to be variously colored because of igneous heat. Thus a new geothermometer is available whenever vari-colored conchostracan fossils are found in interbeds of basalt flows.

E-21512

Colbert, E.H., **Proto-lizards from the Triassic of Antarctica,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.20-21, 2 refs.

Among the fossils collected from the Fremouw Formation of early Triassic age are two skulls, some partial skulls and jaws, and numerous postcranial bones representing a small reptile that might be considered a predecessor of modern lizards. Proto-lizards of the genus *Prolacerta* are characteristic of the Lower Triassic *Lystrosaurus* zone of the Karroo sequence of South Africa. The antarctic fossils seem to belong to the genus *Prolacerta* but evidently represent a new species.

E-21513

Collinson, J.W., Stanley, K.O., Vavra, C.L., **Stratigraphy and sedimentary petrology of the Fremouw Formation (Lower Triassic), Cumulus Hills, central Transantarctic Mountains,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.21-22, 6 refs.

The Fremouw Formation represents a small part of a large river system that probably drained the Gondwanan orogenic belt. Streams in the Cumulus Hills area flowed toward the southwest from a source terrane that included volcanic, metamorphic, and sedimentary rocks. The formation is approx 700 m thick and can be divided into 3 informal members: 1) lower member - equal amounts of ledge-forming sandstone and slope-forming mudstone; 2) middle member - slope-forming siltstone and mudstone with varying proportions of ledge-forming sandstone; and 3) upper member - mostly ledge-forming sandstone. Channel and flood-plain deposits are the two major facies of

the formation. These features are described and paleocurrent directions are given.

E-21514
Cosgriff, J.W., Hammer, W.R., Zawiskie, J.M., Kemp, N.R., **New Triassic vertebrates from the Fremouw Formation of the Queen Maud Mountains,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.23-24, 6 refs.

New Triassic vertebrate material from the Fremouw Formation consists of 116 fossil vertebrate specimens. Thirty of these should prove of particular importance in forthcoming research either for degree of completeness and quality of preservation or for being representative of hitherto unreported species. Specimens were collected from four sites in the Cumulus Hills, the most productive of which were Shenk Peak and Collinson Ridge. Following preparation, two (possibly three) new labyrinthodonts and two new reptiles will probably be added to the fauna.

E-21515
Zinsmeister, W.J., **Eocene nautiloid fauna from the La Meseta Formation of Seymour Island, Antarctic Peninsula,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.24-25, 6 refs.

The occurrence of *Eutrephoceras argentinae* del Valle and Fourcade and a species of *Aturia* provides new evidence of an Eocene age for La Meseta Formation. *E.argentinae* is similar to *E.allani* fleming from the Eocene of New Zealand and *E.victorianus* Teichert from the Paleocene of southeast Australia. The single specimen of *Aturia* from La Meseta Formation is similar to *A.bruggeni* Ihering from the Eocene of Punta Boqueron, Tierra del Fuego.

E-21517
Kellogg, D., Stuiver, M., Denton, G., Kellogg, T., **Fresh-water diatoms from perched deltas in Taylor Valley, Antarctica,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.26-27, 4 refs.

A total of 14 freshwater diatom species, which form 6 floral assemblages, were present in sediment samples from 27 perched deltas in the Taylor Valley. It is concluded that the deltas were deposited in a large freshwater lake dammed behind a tongue of the grounded West Antarctic Ice Sheet which filled the Ross Sea and McMurdo Sound about 18,000 to 19,000 years ago. Similar perched deltas exist in nearby Salmon Valley. It is suggested that these deltas, which are similar elevations to those in Taylor Valley, were deposited in small freshwater lakes dammed by ice-cored moraines deposited by the last Ross Sea glaciation.

E-21518
Briggs, W.M., Jr., **Ostracoda from the Pleistocene Taylor Formation, Ross Island, and the Recent of the Ross Sea and McMurdo Sound region, Antarctica,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.27-29, 8 refs.

A total of 44 genera and 72 species of ostracodes were found in the Taylor Formation and Recent Sediments of the Ross Sea during this study. The ostracode fauna is listed, and 37 of the species are illustrated.

E-21519
McGinnis, L.D., **Dry Valley Drilling Project Seminar III, Tokyo,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.30, 1 ref.

Seminar III was attended by 20 scientists from the U.S., 4 from N.Z., 2 from Australia, 1 from West Germany, and 30 from Japan. Forty-five formal papers were presented and planning meetings were held. The evidence obtained thus far is contradictory. New Zealand proposes to drill deeper into the Sound to determine the age of the sediment there.

E-21520
Treves, S.B., **Geology of DVDP 1 and the hyaloclastite of DVDP 3, Hut Point Peninsula, Antarctica,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.30-31, 1 ref.

Logging, petrographic analyses, and chemical analyses of DVDP 1 indicate that the core consists of 32 flows and 6 pyroclastic units cut by two dikes. The data further indicate that the rocks are differentiates of an alkaline magma. The lowermost 214 m of the DVDP 3 core consists of thin flow units and hyaloclastite which records a period of submarine volcanism that produced a volcanic pedestal upon which the volcanic flows now exposed at the surface accumulated.

E-21521
LeMasurier, W.E., McIntosh, W.C., Tewksbury, D.A., **Volcanoes in the Hobbs Coast and Ruppert Coast sectors of Marie Byrd Land,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.31-32, 4 refs.

During the 1977-78 field season 67 different localities in the Hobbs and Ruppert Coast region were visited. Over half of these were hyaloclastite localities or related to the problem of hyaloclastite elevations. Eleven new hyaloclastite localities were discovered and sampled. K-Ar dates and paleomagnetic and petrologic studies of material for the new localities will enlarge the chronologic base for glacial history interpretations by more than 50%, will provide more data on criteria for sub-thick-ice vs sub-thin-ice eruptions, and perhaps will reveal a horizon of stratigraphic value in the paleomagnetic character of the hyaloclastite sections. Futhermore, K-Ar dates on the cinder cones and hyloclastites near the present ice level will be used to study the stability of ice levels in this region. The study of volcanic history as it related to the processes that caused the fragmentation of Gondwanaland is another important objective of these investigations.

E-21522
Kyle, P.R., McIntosh, W.C., **Volcanic activity at Mt. Erebus, 1977/78,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.32-34, 1 ref.

Volcanic activity within the laval lake at Mt. Erebus consisted of three main features: laval upwelling in nearly circular areas; small bubble-like degassing eruptions; and downwelling of the consolidated crust along planar troughs or subduction zones. The most significant change in the activity during 1977-78 was an increase in explosive strombolian eruptions. Data on the frequency and duration of eruptions, development of the lake, patterns of activity, and major element analyses of the ejecta are illustrated.

E-21523
Kyle, P.R., Muncy, H.L., **Volcanic geology of the lower slopes of Mt. Morning,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.34-36, 6 refs.

The geology of the McMurdo volcanics on the lower slopes of Mt. Morning is described. A sample from this area has yielded a K-Ar age of 15.4 m.y. The McMurdo volcanics at Gandalf Ridge overlie a basement of skelton group granitic intrusive rocks and intercalated metasedimentary schists. Highly sheared trachyandesite overlies the basement. The highly sheared nature of the trachyandesite is caused by intrusion of strongly oversaturated peralkaline trachyte dikes, which are mostly porphyritic. Several massive peralkaline trachyte laval flows occur at the extreme south end of Gandalf Ridge. The trachyandesite and dike complex is cut by north-south trending faults, shear zones, and zones of intense hydrothermal alteration and silicification. A breccia or diamictite overlies the trachyandesite and dike

complex. The clasts are volcanic and consist mainly of peralkaline trachyte and occasionally, porphyritic trachyandesite. The matrix is strongly altered and weathered.

E-21524

Bockheim, J.G., **Soil weathering sequences in Wright Valley,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.36-39, 7 refs.

Soils in Wright Valley were examined during the 1977-78 field season to establish their relationship to Wright Lower, Wright Upper, and alpine glaciations, and to compare them with soils previously investigated in Taylor Valley. Detailed descriptions were made for 55 profiles. A total of 295 soil samples were collected, and surface weathering features were recorded at 28 localities. A map of Wright Valley gives the location of soil profiles and landforms, and tabular data reflect the soil morphology, surface weathering characteristics, the effects of advances of the Wright Lower Glacier, and correlation of Wright and Taylor Valley soils.

E-21525

Cassidy, W.A., **Antarctic search for meteorites during the 1977-78 field season,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.39, 4 refs.

Of 310 samples recovered from major bare ice patches along the western side of Allan Hills, 307 were identified as meteorites. One meteorite was found on ice at a field camp located between the eastern and western arms of Allan Hills. It is believed that the collection represents 20 to 50 new finds. The specimens were found for the most part on the upper and lower limbs of an ice monocline, which may reflect the existence of a near-surface ridge across which which the ice is flowing. Data on ice-flow regimes could help in the search for meteorite concentrations. On the other hand knowledge of meteorite concentrations should help to interpret ice-flow regimes and to infer past climate.

E-21527

Borns, H.W., Jr., **Ross Sea glaciations: events in Lower Victoria Valley,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.43-44, 3 refs.

The glacial geology of the Lower Victoria Valley was studied in order to determine whether, and to what extent, lower Victoria Valley had been invaded from the seaward side by ice of the Ross Sea glaciations. The broad distribution of volcanic clasts and apparent lack of in-place young volcanics in the lower Victoria Valley area suggest that a Ross Sea source is the most reasonable explanation. Preliminary field work suggests that Victoria Lower Glacier has expanded several times and out of phase with at least many of the alpine glaciers that drain into the valley. This evidence, coupled with the elevation of the bedrock beneath the Victoria Lower Glacier and with the presence of scoreaceous basalt clasts in the drift, suggests the possibility that ice of the Ross Sea glaciations moved into Lower Victoria Valley several times. An 18-kg iron meteorite, thought to be the largest yet found in Antarctica, was discovered embedded in the till surface on the north side of the valley floor approx 1 km in front of the Victoria Lower Glacier.

E-21528

Stuiver, M., Denton, G.H., Kellogg, T.B., Kellogg, D.E., **Glacial geologic studies in the McMurdo Sound region,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.44-45, 7 refs.

Glacial geologic studies during the 1977-78 field season included the following projects: mapping surficial deposits in Wright Valley between Wright Lower Glacier and Lake Vanda; collecting additional algae C-14 samples from deltas deposited in Glacial Lake Washburn in Taylor Valley; obtaining a chronology for young, ice-cored moraine ridges that border most glaciers in the McMurdo Sound Region; collecting shells and obtaining initial C-14 dates from the McMurdo Ice Shelf; and examining the glacial geology of the Ruppert and Hobbs Coasts.

E-21529

Karlén, W., Melander, O., **Reconnaissance of the glacial geology of Hobbs Coast and Ruppert Coast, Marie Byrd Land,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.46-47, 7 refs.

Examples of striations, weathering, and glacial polish observed during reconnaissance of the glacial geology of Hobbs Coast and Ruppert Coast are discussed. In the Ruppert Coast area striations shown an ice movement mainly toward north and northwest (essentially the same as the present). At a few places striations indicate that an ice movement toward northeast occurred at some time. Directions of the striations in the Hobbs Coast area were also basically the same as the direction of ice movement that now occurs (north and, locally, west). Striations dated at 13 m.y. old have been reported from Boyer Butte. Field observations indicate that glaciers in direct contact with the sea have retreated through calving, while glaciers not in direct contact with the sea show no evidence of a retreat in recent time.

E-21558

Wise, S.W., Jr., ***Islas Orcadas* cruise 16,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.92-94, 3 refs.

ARA *Islas Orcadas* departed from Buenos Aires Apr. 5, 1978, on a 54-day, 6,781-nautical-mile cruise to the southwest Atlantic sector of the southern ocean for: (1) marine geology: coring survey of older (pre-Pliocene) strata on the Falkland (Malvinas) Plateau, Georgia Basin, and the Islas Orcadas Rise to elucidate the older geologic history of the region; coring east and northeast of the Scotia Arc to trace Antarctic Deep Water flow. (2) physical oceanography: hydrographic surveys east and northeast of the Scotia Arc to trace Antarctic Deep Water flow and the configuration of the Polar Front; hydrographic transect across the Argentine Basin. (3) marine geophysics: investigation of the northeast Georgia Rise tectonics, the pre-Eocene spreading regime and fracture zone trends east of the Scotia Arc on the South Atlantic tectonic plate, and a tie-in profile with cruise 15 over the young crust southeast of the Scotia Arc. A total of 120 ship stations were attempted, yielding 69 complete piston cores and 73 successful conductivity-temperature-depth (CTD) stations. All major objectives were met, at least in part.

E-21559

Ciesielski, P.F., Kaharoeddin, F.A., Cassidy, D.S., **Basal sediment ages of Islas Orcadas cruise 11 piston-cores,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.94-97, 10 refs.

Sediment recovery during *Islas Orcadas* cruise 11 from Buenos Aires to Cape Town was successful at 49 of the 50 attempted coring stations. Preliminary basal sediment ages for the cores are shown in a table, which lists piston core number, latitude, longitude, water depth, sample interval, sediment lithology, and the age of the core sediment at each sampled interval. Coring activities were concentrated on the Malvinas (Falkland) Plateau, the Northeast Georgia Rise, and along a NNE track from 58 to 45S. The basal sediment ages of the 49 piston cores range from late Eocene to Quaternary; sediments from 17 cores are Pliocene or older.

E-21560

DeFelice, D.R., **Basal sediment ages of ARA *Islas Orcadas* cruise 12 piston cores,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.97-98, 4 refs.

Preliminary basal sediment ages for 39 of the 46 piston cores recovered on ARA *Islas Orcadas* cruise 12 are presented. (Seven

cores were found to be barren of microfossils diagnostic for age determination.) Cruise 12 began in Capetown, South Africa, in Jan. 1977 and ended in Mar. 1977 in Buenos Aires, Argentina. The objectives of the coring operation were to improve core control in the southeast sector of the South Atlantic Ocean as a means of increasing understanding of the depositional history of the area. Most cores were taken in conjunction with physical oceanographic stations along geophysical seismic tracts, allowing for the integration of sedimentologic, hydrologic, and structural data. A table lists piston core number, latitude, longitude, water depth, sample interval, core length, and basal age.

E-21561

Blunt, D.J., Warnke, D.A., DeFelice, D.R., **Amino acid racemization in *Islas Orcadas* piston core 12-77-24,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.99-100, 7 refs.

This preliminary report discusses some of the early results of amino acid analyses on the foraminiferal fraction of core 12-77-24. The foraminiferal component is predominantly left-coiling *Globigerina pachyderma,* which has a wide age range. The diatoms *Coscinodiscus elliptipora* and *Actinocyclus ingens* are also present. A plot of amino acid enantiomeric (D/L) ratios vs. depth in the core is presented. The two most important characteristics of the graph are: (a) there is only a minor change in each amino acid D/L ration with depth (although a trend toward increasing D/L ratios is present); and (b) the amino acids show significant apparent racemization even at the top of the core. Although alanine shows more variability with respect to other amino acids down-core, the order of racemization is as follows: aspartic acid alanine leucine glutamic acid valine. This order is consistent with other studies that have reported more than one amino acid.

E-21563

Kennett, J.P., **Cenozoic microfossil datums in antarctic to subantarctic deep-sea sedimentary sequences,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.102-104, 8 refs.

Biostratigraphic information for the Southern Ocean region is important for a complete understanding of global biogeographic and biostratigraphic and paleoclimatic controls of dynamic changes that are known to have occurred in the planktonic realm. Four deep-sea drilling legs involving *Glomar Challenger* have provided much new information on Cenozoic biostratigraphy. The author (in press) has recently compiled a sequence of biostratigraphic datums of the major planktonic microfossil groups in the southern ocean, which provides a historical sequence of microfossil events through the Cenozoic. The datum levels of Quaternary and Pliocene age are now well known because of integration with magnetostratigraphy, better sediment records, and more numerous studies. In contrast, the relative position of Miocene and older datum levels is much less firmly established. Reasons for this are explored.

E-21564

Wise, S.W., Jr., **Paleontology and paleoenvironment of the Southwest Atlantic Ocean Basin,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.104-107, 9 refs.

This article is a condensation of an extended paleontological and paleoenvironmental summary by Wise et al (in press) of research concentrated in the southwest Atlantic sector of the Southern Ocean. Data from three DSDP leg 36 drill cores and selected piston cores taken on the Falkland (Malvinas) Plateau are summarized. The Tertiary sequence is characterized by sharp fluctuations of the CCD and strong erosional events. The late Miocene hiatus recorded in Southern Ocean cores, which is thought to be the result of erosion and sharp changes in microfossils caused by intensification of the circumpolar current during the terminal Miocene event, is discussed.

E-21565

Malmgren, B.A., Cronblad, H.G., **Planktonic foraminiferal dissolution at high latitudes of the southwestern Atlantic,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.107-109, 11 refs.

Analyses of *Eltanin* and *Islas Orcadas* core tops from the southwestern Atlantic (Scotia and Weddell Seas) are reported. The calcium-carbonate compensation depth (CCD) in the western basin (2,000 m) is much shallower than that in the eastern basin (3,700 m). Differential-dissolution analysis indicates that fragmentation of planktonic foraminiferal tests is relatively constant down to about 3,500 m, after which it increases considerably, indicating an increase in dissolution below this depth. An increase in benthonic foraminiferal percentages occurs at about the same depth. The ratio between the dissolution-resistant *Globorotalia inflata* and *G. bulloides* appears to be particularly sensitive to dissolution. The number of planktonic foraminiferal tests per gram of raw sediment is strongly related to the percent of CaCO3.

E-21566

Glasby, G.P., Cassidy, D.S., **Distribution of manganese nodules with depth in sediments of the South Georgia Basin, Falkland (Malvinas) Plateau and adjacent areas,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.110-111, 17 refs.

A histogram of the depth distribution of nodules in 14 *Islas Orcadas* piston cores reveals that of 69 nodule occurrences, only 22 (32%) are in the upper 1 m of sediment; and of these, only 5 could be considered to be from the sediment surface. Only 7% of the nodules recovered, therefore, occur at the sediment surface in cores up to 17 m in length. This study indicates not only the high abundance of nodules in the South Georgia Basin-Falkland Plateau region, but also their widespread distribution with depth in the sediment core. The importance of high bottom-current velocities in the distribution of manganese nodules is stressed.

E-21567

Kennett, J.P., **Modern zoogeography of antarctic planktonic microfossils,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.111-113, 10 refs.

Having reviewed southern ocean distributions of the microfossil zooplankton groups as a whole, namely the planktonic foraminifera, radiolaria, and the pteropods (Kennett, in press), the author summarizes the major biogeographic patterns exhibited within and between the antarctic and subantarctic water masses.

E-21569

DeFelice, D.R., Miller, W., III, **Structure of the Middle Miocene antarctic diatom species *Denticula antarctica* McCollum,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.115, 2 refs.

Scanning electron and light microscopic examination of the Middle Miocene antarctic diatom species *Denticula antarctica* McCollum (1975) demonstrates the wide range of morphologic variability found within the species. Valves are elliptical to linear-elliptical with bluntly rounded apices. They range from 15 to 76 microns in length and from 3 to 9 microns in width. Margins of the valve are generally parallel to subparallel, maximum width occurring at midlength and gradually tapering in width toward the apices. The structures of the specimens examined are described.

E-21570

Corliss, B.H., **Studies of deep-sea benthonic foraminifera in the southeast Indian Ocean,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.116-118, 10 refs.

The distribution of two assemblages of deep-sea benthonic foraminifera in the southeast Indian Ocean is studied to evaluate their possible relations with deep-sea water masses. The first major faunal assemblage is dominated by *Epistominella umbonifera* (Cushman), *Planulina wuellerstorfi* (Schwager), *Globocassidulina subglobosa* (Brady), *Pullenia bulloides* (d'Orbigny), and *Oridorsalis tener* (Brady). This assemblage is associated with Antarctic Bottom Water (AABW). The second major faunal assemblage is marked by a strong dominance of *Uvigerina* spp. and *Epistominella exigua* (Brady) and is associated with Indian Bottom Water (IBM) on the Southeast Indian Ridge and water intermediate between AABW and IBW in the South Australian Basin. The faunal-water mass relationships found in the distributional study have been used to infer the history of AABW circulation over the last 500,000 yr in this region from faunal data from four *Eltanin* cores.

E-21571

Malmgren, B.A., Kennett, J.P., **Late Quaternary paleoclimatic applications of mean-size variations in *Globigerina bulloides* d'Orbigny in the southern Indian Ocean,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.118-119, 3 refs.

Studies to determine whether mean size in *Globigerina bulloides* responds to paleoclimatic changes have shown that mean size in these assemblages may be a useful paleoclimatic index in studies of deep sea cores in the Southern Ocean region. The method must be used carefully in cores exhibiting intensive calcium carbonate dissolution because selective dissolution could bias the size distribution of *G. bulloides.*

E-21573

Ronan, T.E., Jr., Webb, P.N., Lipps, J.H., Delaca, T.E., **Miocene glaciomarine sediments from site J-9, Ross Ice Shelf, Antarctica,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.121-124, 2 refs.

Bottom sediments collected from beneath the Ross Ice Shelf through the access hole at site J-9 have been analyzed for both sedimentary and micropaleontologic information. The sedimentary succession obtained can be subdivided into two lithologic units: igneous, metamorphic, and sedimentary pebble and coarse sand-size clasts. Grain-size analyses were made on sphincter core and gravity core samples. Abundant siliceous and calcareous microfossils occur in the lower diamicton whereas only siliceous taxa are present in the upper 10-20 cm. It is concluded that the entire sedimentary section is a mid-Miocene succession in which there has been near-surface alteration and some subsequent transport of the silt/clay fraction. The entire diamicton clearly has a glacial origin, with sedimentation occurring below floating ice.

E-21574

Brady, H.T., **Miocene diatom flora from bottom cores at RISP site J-9,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.123-124, 4 refs.

Rich and diverse diatom floras were obtained from bottom cores collected at Ross Ice Shelf Project site J-9. At least 44 species of planktonic diatoms were recovered from the lower diamicton unit. The thin upper light olive gray diamicton contains a highly fragmented and poorly preserved diatom flora. It is deduced that the J-9 floras are middle Miocene in age.

E-21575

Kellogg, T.B., Osterman, L.E., Truesdale, R.S., **Late Quaternary paleoecology and paleoclimatology inferred from Ross Sea sediments,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.124-125, 13 refs.

Studies of Ross Sea piston cores revealed three down-core sedimentary units: Unit A, a diatom-rich silty sediment; Unit B, a till-like sediment with only rare faunal and floral remains; and Unit C, a diatom-rich sediment. Units A and B are separated by a well-sorted sandy sediment in which rare diatoms of the *Eucampia balaustium* assemblage predominate, indicating sediments winnowed by strong bottom currents. The findings disagree with Fillon's (1972, 1974, 1975) interpretations of Ross Sea sediments and his age assignments. It is proposed that Unit A is Holocene rather than Brunhes, that unit B is not Gauss, but Late Pleistocene, and that Unit B is a till and not a deposit formed beneath a floating ice shelf. The revised paleoclimatic interpretation of Ross Sea sediments supports the contention that grounded ice extended to the continental shelf margin in the Ross Sea during the Late Würm glacial maximum.

E-21576

Kellogg, T.B., Melanson, K., Kenoyer, G., **Piston coring aboard USCGC *Glacier* in the Ross Sea,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.126-127, 3 refs.

The major objective of this year's coring project was to obtain cores suitable for additional dating of unit A, to substantiate a hypothesis that this sediment was deposited during the Holocene. A method was devised for extracting core liners from core pipes while they were still in the vertical position. The cores obtained were accidentally spilled during unloading from *Glacier.* It is hoped that they are not too seriously damaged to fulfill the field objectives.

E-21577

Siegel, F.R., Dulong, F.T., Dorrzapf, A., Hearn, P.P., Pierce, J.W., **Geochemistry of the fine size fraction of bottom sediments from the southern Argentine shelf,** *Antarctic journal of the United States,* Oct.1978 13(4), p.128-129, 7 refs.

The combined silt and clay size fractions of bottom sediments from the southern Argentine continental shelf have been studied by emission spectrographic analysis. Twenty of the trace elements analyzed were present in greater than detection level concentrations. A summary of the data is presented together with data for major element concentrations. The data provide reference bases for future evaluations of geochemical processes in the environment.

E-21586

Ronan, T.E., Jr., Lipps, J.H., Delaca, T.E., **Sediments and life under the Ross Ice Shelf (J-P), Antarctica,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.141-142, 7 refs.

Videotapes of the J-9 sea floor show a depositional interface carpeted with indurated clay fragments and cobbles, but devoid of biological activity and epifaunal organisms. Even more unusual was the absence of biological mixing of the sediment cores. Azam et al (1978) have shown that there are bacteria and probably other microbes in the sediment, but their numbers are low.

E-21638

Annexstad, J.Q., **Processing and distributing antarctic meteorites collected during 1977-78,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.219-200, 8 refs.

Meteorites collected during 1977-78 in the vicinity of Allan Hills in the Transantarctic Mts. totaled over 300 specimens. Prior to these discoveries about 1,000 meteorite fragments had been found in Antarctica. An interagency program has been initiated for collecting, processing, and distributing the material. The specimens found at Allan Hills were collected and packed with special handling materials, and sent frozen to Port Hueneme, Calif., then repacked and air-freighted to the Johnson Space Center at Houston for storage in a -40C freezer. Initial processing of the specimens included identification, weighing, photography, describing surface features, and chipping for further analyses. Specimens are kept frozen during these activities. The thin-section chip is classified and petrographically de-

scribed; the cold-storage chip is retained for special scientific studies. Specimen information is reported in a newsletter, and samples may be requested by investigators for analysis.

E-21639

Cassidy, D.S., Wise, S.W., Jr., **Antarctic Marine Geology Research Facility, 1977-78,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.221-222, 17 refs.

Curatorial activities at the Antarctic Marine Geology Research Facility for the year June 1, 1977 to May 31, 1978 were dominated by the distribution of marine and other antarctic sedimentary samples, the receipt of new materials, and preparation and dissemination of core descriptions for ARA *Islas Orcadas* piston and trigger cores. A total of 14,154 samples distributed were received by 43 investigators representing 18 institutions of 4 nations. Research objectives by members of the facility have been concentrated largely on the geologic history of the Malvinas (Falkland) Plateau.

E-21640

Wise, S.W., Jr., Siegel, H.J., Mouzo, F.H., Marmorato, M.A., Yung, A., **Core splitter for Argentine-U.S. coring program,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.222-223, 2 refs.

A core splitter has been constructed for use in a joint coring program conducted aboard the ARA *Islas Orcadas.* Cores are taken aboard *Islas Orcadas* by a Ewing piston corer modified to accept a 2.5-in diam plastic liner. This liner must be cut along two sides before the core can be opened for examination and sampling. The core splitter is silent and hand operated. It weighs approx 150 lbs, is 84 in long, and can accommodate cores of any length up to 5 1/2 feet. Its design and operation are described.

E-21652

Zumberge, J.H., **Mineral resources and geopolitics in Antarctica,** *American scientist,* Jan.-Feb. 1979 67(1), p.68-77, Refs. p.76-77.

After an overall introduction to the Antarctic continent—its geography and climate—the author discusses in more detail the two overriding obstacles to mineral development there. The first is a complex of geographic and climatic problems—harsh temperatures, thick ice on both land and sea, bottom-scouring icebergs, heavy winds —all of which would present grave technological difficulties for exploration and mining. The second set of handicaps is political. He describes the impact that the Antarctic Treaty has had and may continue to have on the international status of the continent, the pressures that could destroy the treaty and some proposed methods of handling the political aspects of mineral development.

E-21656

Rowe, G.H., **Petrographic and paleontological study of lower Tertiary erratics from Quaternary moraines, Black Island, Antarctica,** Columbus, Ohio State University, 1974, 91p., Refs. p.82-83. B. Sci. honors thesis.

Five erratic fossiliferous sandstone blocks from Quaternary moraine deposits of Black Island, McMurdo Sound, Antarctica were studied, and found to represent a sequence in a facies laid down in Eocene times. Sediments were derived from lithologies found in the Transantarctic Mountains, mainly Beacon Supergroup sediments, Ferrar Dolerite, metasediments and plutonics. These sediments were transported to a beach environment, and affected by wind and water media, attaining textural submaturity, with sorting and fine to medium grain size. Marine transgression and a warm climate enabled an abundance of molluscs to aid currents in reworking the sediment, before being cemented during initial stages of diagenesis with sparry calcite, which replaced some quartz. During a particular undated glacial, the erratics were eroded and thrust up during ice movement, producing some striated surfaces. Deposition occurred during ice retreat. Negligible post depositional chemical weathering took place. The source region of the erratics is postulated to be within an area south of Minna Bluff to latitude 80S ranging between longitude 170 E and the Transantarctic Mountain Range. (Auth.)

E-21657

Jacobs, S.S., Gordon, A.L., Amos, A.F., **Effect of glacial ice melting on the Antarctic Surface Water,** *Nature,* Feb. 8, 1979 277(5696), p.469-471, 49 refs.

Most glacial ice melting occurs below the sea surface and in regions where ice shelves and icebergs are concentrated, as along the Antarctic coastline. It is shown that this melting can significantly affect the Antarctic Surface Water (AASW) chemistry and biology only for glacial ice constituents are greatly depleted (for example, salt, oxygen-18) or enhanced (for example, ammonia?) relative to the ocean. The surface water nutrient (nitrate, phosphate, silicate) budget is controlled primarily by the upwelling of deep water. Melting beneath the Ross Ice Shelf results in the northwards lateral movement of near-freezing water to the continental shelf break. Basal melting of icebergs and smaller ice shelves may contribute to the temperature minimum at the base of the AASW. (Auth.)

E-21697

Ravich, M.G., **Soviet geological research in Antarctica** [Sovetskie geologicheskie issledovaniia v Antarktike], *Antarktika; doklady komissii,* 1978 No.17, p.132-143, In Russian.

Soviet geological findings in Antarctica over the past 20 years are reviewed, and a general plan for geological research for the coming 10-12 years is drawn up.

E-21698

Ravich, M.G., **Comparative study of bedrock in the Adelaide (Australia) and Ross (Antarctica) geosynclinal areas** [Sravnitel'naia kharakteristika fundamenta Adelaidskoĭ (Avstraliia) i Rosskoĭ (Antarktida) geosinklinal'nykh oblasteĭ], *Antarktika; doklady komissii,* 1978 No.17, p.144-160, In Russian. 7 refs.

A section of folded basement of the Adelaide geosyncline in Australia is described. This section is compared to the Ross geosynclinal area in Antarctica. There is a marked similarity in the two regions, strong evidence for the existence of the Gondwana supercontinent.

E-21699

Ravich, M.G., Fedorov, L.V., Khofmann, I., **Comparison of geological structure of southeast Indostan and Sri Lanka with Enderby Land, Mac. Robertson Land and Princess Elizabeth Land in East Antarctica** [Sravnenie geologicheskogo stroeniia iugo-vostochnogo Indostana i ostrova Shri Lanka s zemleĭ Enderbi, zemleĭ Mak-Robertsona i zemleĭ Printsessy Elizavety v Vostochnoĭ Antarktide], *Antarktika; doklady komissii,* 1978 No.17, p.161-176, In Russian. 46 refs.

This article discusses the geological similarities between southeast Indostan and the central part of East Antarctica, which at times touched or was part of the Gondwana supercontinent. The two areas are identical in terms of the Permian carboniferous deposits, Proterozoic sediments with jaspilites in linearly extended troughs delineated by active faults, and in the crystalline basements.

E-21700

Kamenev, E.N., Ravich, M.G., **Antarctic metamorphic facies** [Metamorficheskie fatsii Antarktidy], *Antarktika; doklady komissii,* 1978 No.17, p.177-186, In Russian. 4 refs.

Current knowledge of antarctic metamorphic facies is reviewed. Mineral associations, thermodynamic parameters of metamorphism and the geological position of metamorphic complexes are discussed. A stratigraphic enumeration of Early Precambrian metamorphic layers is formulated on the basis of a description of metamorphic facies, tectonic features of the crystalline basement and the absolute age of the rocks.

E-21701

Solov'ev, I.A., Grikurov, G.E., **Discovery of first Middle Cambrian trilobites in the Shackleton Range** [Pervye nakhodki srednekembriĭskikh trilobitov v khrebte Sheklton (Antarktida)], *Antarktika; doklady komissii,* 1978 No.17, p.187-198, In Russian. 19 refs.

During geological field studies of the 21st SAE in the Shackleton Range, ptychopariid trilobites from the Middle Cambrian were found. The hypothesis that the deposits containing this fauna were laid down stratigraphically above the metamorphic basement but below the sediment layer from the Blaiklock glacier is offered. A list of the trilobites and descriptions are given. A biostratigraphic correlation of these layers with those of the same age on other continents is included.

E-21704

Miagkov, S.M., **Geomorphological map of Antarctica (1:15,000,000)** [Geomorfologicheskaia karta Antarktidy v masshtabe 1:15,000,000], *Antarktika; doklady komissii,* 1978 No.17, p.212-216, In Russian. 26 refs.

A new geomorphological map of Antarctica was compiled as part of a world map prepared by the geomorphology group of the Moscow State University geography department. Geomorphology of subglacial areas is shown based on geophysical, geological and other data gathered over the past 20 years. As an example, a simplified fragment of the map with an abbreviated legend is included.

See also:
A-19269 A-19307 A-19370 A-19529 A-19737 A-19756 A-20212 A-20269 A-20272 A-20289 A-21358 A-21364 A-21365 B-19297 B-19302 B-19314 B-19472 B-19490 B-19519 B-19550 B-19611 B-19978 B-19979 B-19980 B-19982 B-20007 B-20010 B-20101 B-20102 B-20165 B-20207 B-20239 B-20397 B-20436 B-20537 B-20538 B-20548 B-20580 B-20592 B-20799 B-20835 B-20892 B-20900 B-20901 B-20915 B-20918 B-20930 B-21154 B-21199 B-21228 B-21240 B-21350 B-21351 B-21394 B-21562 B-21605 C-19675 C-19753 F-19569 F-19676 F-19681 F-19688 F-19839 F-19921 F-20045 F-20112 F-20115 F-20119 F-20121 F-20125 F-20279 F-20319 F-20374 F-20392 F-20402 F-20505 F-20732 F-20865 F-21255 F-21262 F-21392 F-21533 G-20313 G-21152 I-19845 I-20150 I-20184 I-20596 I-21014 I-21050 I-21186 I-21187 I-21188 J-19257 J-19261 J-19270 J-19274 J-19321 J-19516 J-19633 J-19638 J-19742 J-19914 J-19942 J-20506 J-21020 J-21115 J-21127 J-21212 J-21452 J-21568 J-21572 J-21710 L-19267 L-19433 L-19513 L-19651 L-19802 L-19854 L-19879 L-19910 L-20013 L-20062 L-20266 L-20278 L-20364 L-20624 L-20688 L-20696 L-20861 L-20862 L-21019 L-21052 L-21193 L-21194 L-21230 M-19324 M-20189 M-20789

F. ICE AND SNOW

F-19285
Vilenskiĭ, V.D., Emel'ianov, V.V., Koroleva, N.I., **Investigating atmospheric aerosol transfer by means of geochemical study of the antarctic ice sheet** [Izuchenie perenosa aerozoleĭ v atmosfere po geokhimicheskim kharakteristikam lednikovogo pokrova Antarktidy], Akademiia nauk Litovskoĭ SSR. Institut fiziki i matematiki. Zashchita atmosfery ot zagriazneniĭ. Vypusk 3 (Air pollution control. Vol. 3), Vilnius, 1976, p.79-86, In Russian with English summary. 11 refs.

DLC QC879.6.Z37 Bblr 3

On the basis of the data obtained about the concentrations of chloride, sulphate, decay products and lead-210 in the contemporary snow cover in the coastal and inland regions of Eastern Antarctica the main factors having influence on the concentrations of the substances, deposited in the snow cover are considered. The data are given about concentration variation of chloride and sulphate according to the movement off the coast. It is shown that concentrations of decay products in the snow cover reveal distinct seasonal variations. It is assumed that the conditions of snow cover formation are the main reasons leading to long-term variations of lead-210 concentrations in the snow cover in a number of regions. (Auth.)

F-19293
Yoshida, Y., Murozumi, M., **Mercury profile of Mizuho ice sheet, Antarctica,** *Antarctic record,* Aug. 1977 No.59, p.26-29, 1 ref., In Japanese with English summary.

Mercury concentration in ice-core samples has been determined by the newly developed atomic absorption techniques. As shown in the attached table, mercury concentration is by far larger in recent snow than in ancient ice. This fact reflects the increasing worldwide consumption of this element and the progressive atmospheric pollution by heavy metals including lead since the Industrial Revolution. (Auth.)

F-19330
Gow, A.J., Williamson, T., **Rheological implications of the internal structure and crystal fabrics of the West Antarctic ice sheet as revealed by deep core drilling at Byrd Station,** *U.S. Army Cold Regions Research and Engineering Laboratory,* CR 76-35, Sep. 1976, 25p., ADA-031 745, Bibliography p.22-25.

Crystalline textures and fabrics of ice cores from the 2,164-m-thick ice sheet at Byrd Station, Antarctica, reveal the existence of an anisotropic ice sheet. A gradual but persistent increase in the c-axis preferred orientation of the ice crystals was observed between the surface and 1,200 m. This progressive growth of an oriented crystal fabric is accompanied by a 20-fold increase in crystal size between 56 and 600 m, followed by virtually no change in crystal size between 600 and 1,200 m. A broad vertical clustering of c-axes develops by 1,200 m. Between 1,200 and 1,300 m the structure transforms into a fine-grained mosaic of crystals with their basal glide planes now oriented substantially within the horizontal. This highly oriented fine-grained structure, which persists to 1,800 m, is compatible only with a strong horizontal shear deformation in this part of the ice sheet. Rapid transformation from single- to multiple-maximum fabrics occurs below 1,800 m. This transformation, accompanied by the growth of very large crystals, is attributed to the overriding effect of relatively high temperatures in the bottom layers of old ice at Byrd Station rather than to a significant decrease in stress. The zone of single-maximum fabrics between 1,200 and 1,800 m also contains numerous layers of volcanic dust. Fabrics of the very fine-grained ice associated with these dust bands indicate the bands are actively associated with shearing in the ice sheet. Some slipping of ice along the bedrock seems likely at Byrd Station, since the basal ice is at the pressure melting point and liquid water is known to exist at the ice/-rock interface. The textures and fabrics of the ice indicate that plastic deformation (intracrystalline glide) in the zone of strong single-maximum fabrics, and movement of ice along discrete shear planes situated well above bedrock, are also major contributors to the flow of the ice sheet. Any extensive shearing at depth could seriously distort stratigraphic records contained in the ice cores, such as climatic history inferred from stable isotope analysis. Also, the common practice of using simplified flow models to approximate the depth-age relationships of deep ice sheet cores may need to be revised in light of the deformational features and fabrics observed in the Byrd Station ice cores.

F-19333
Doronin, IU.P., Kheĭsin, D.E., **Sea ice,** New Delhi, Amerind Publishing Co., 1977, 323p., TT 75-52088, 307 refs. For Russian original see 30-46 or F-15267.

Formation, growth and melting of sea ice, its physical properties, thickness, structure and salinity are discussed as well as combined influence of thermal and dynamic processes in the ocean. Arctic and Antarctic sea ice are compared in Chapter 13, p.281-301. The near-shore ice in Antarctica is much thicker due to a thicker snow cover wind-blown from the continent. Another distinguishing feature is a wide development of underwater ice in coastal waters. Beyond the snowdrift range the Antarctic sea ice acquires a closer similarity to Arctic ice. Fast ice is less developed in Antarctica where its average width varies from 25 to 35 km. As a rule, the Antarctic sea-ice fields are cut by fissures, ice-free reaches and polynyas. Ice field sizes diminish toward the ice edge, gradually becoming small floes. Old ice masses, similar to those in the Arctic Ocean, never occur in Antarctic waters.

F-19347
Clough, J.W., **Ross Ice Shelf Project, 1976-1977,** *Polar record,* Sep. 1977 18(117), p.601-602.

Thirty-four strain networks in the Roosevelt I. camp area were remeasured during the Ross Ice Shelf Project's third season. Field support was provided by Twin Otter aircraft. Eighty new survey sites were occupied, equal to the number of stations established during the first two seasons combined. Three small camps were established for a meteorological program and a tidal gravity program. In addition, field camps were established on Roosevelt I. and at C-7, where shallow drilling to a depth of 50 m was accomplished and ice cores collected.

F-19366
Meier, S., **Antarctic icebergs** [Antarktische Eisberge], *Wissenschaft und Fortschritt,* 1976 26(12), p.537-539, In German.

Popular review of the possible use of antarctic icebergs as freshwater resources. Statistical data on the volume of icebergs, estimated losses during transport to warm areas, and technical requirements of towing are touched upon.

F-19402
Soviet antarctic expedition bulletin, vol. 92, 1976: selected articles, *U.S. Army Cold Regions Research and Engineering Laboratory.* TL 654, Oct. 1977, 37p., ADB-022 850L, Translated from Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten', Vol.92, 1976. For individual papers see 32-1385 through 32-1391 or F-19403 through F-19408 and G-19409. For Russian originals of these papers see 31-912 through 31-917 or F-17626 through F-17631 and G-17635. Distribution limited to U.S. Gov't agencies only.

The report includes several articles dealing with the various physical properties of antarctic shore ice. The final paper discusses the use of large tabular icebergs as alternative cargo off-loading areas and as airfields, describing the case of off-loading an IL-14 onto an iceberg when ice conditions prevented a cargo ship from reaching Molodezhnaya.

F-19403
Kozlovskiĭ, A.M., Cherepanov, N.V., **Effect of coastal morphological features on the formation of underwater ice in antarctic seas,** Soviet antarctic expedition bulletin, Vol.92, 1976: selected articles. CRREL TL 654, Hanover, New Hampshire, U.S. Army Cold Regions Research and Engineering Laboratory, 1977, p.1-7, ADB-022 850L, 9 refs. For Russian original see 31-912 or F-17626.

Sea ice formation was studied as a function of the nature of the coastal outline. It appears that the sea ice formation increases as the shore is approached, that it forms more readily along ice shelves or at the outlet of glaciers, and that the dimensions of patches of sea ice are approximately the same in all cases, and their cross-sections average around 50-60 mm.

F-19404
Kozlovskiĭ, A.M., **Some peculiarities of the formation and structure of shore ice along the Amery Ice Shelf,** Soviet antarctic expedition bulletin, Vol.92, 1976: selected articles. CRREL TL 654, Hanover, New Hampshire, U.S. Army Cold Regions Research and Engineering Laboratory, 1977, p.8-14, ADB-022 850L, 10 refs. For Russian original see 31-913 or F-17627.

In December 1973 a study of the Amery Ice Shelf and its attached fast ice was undertaken. A strip about 6 km long and 12-14km wide was investigated to determine its general surface morphology, snow thickness, ice temperature, density, and other parameters. The results are presented in the form of tables and diagrams.

F-19405
Kozlovskiĭ, A.M., **Some peculiarities and causes of multi-year sea ice formation in the Cosmonaut Sea,** Soviet antarctic expedition bulletin, Vol.92, 1976: selected articles. CRREL TL 654, Hanover, New Hampshire, U.S. Army Cold Regions Research and Engineering Laboratory, 1977, p.15-18, ADB-022 850L, 4 refs. For Russian original see 31-914 or F-17628.

Aerial surveys were made to determine the distribution and size of sea ice which survived from previous years. The structure and other features were examined in an attempt to ascertain the source of the fragments.

F-19406
Fokeev, N.V., **Strength of summer shore ice in Antarctica under uniaxial compression,** Soviet antarctic expedition bulletin, Vol.92, 1976: selected articles. CRREL TL 654, Hanover, New Hampshire, U.S. Army Cold Regions Research and Engineering Laboratory, 1977, p.19-26, ADB-022 850L, 7 refs. For Russian original see 31-915 or F-17629.

Ninety-six various types of summer fast ice were studied to determine stability, salinity, and temperature when varying amounts of pressure were exerted on either a vertical or horizontal axis. The results are presented in graphs and tables. An equation was formulated defining stability as a function of temperature. No direct relation was found between stability and salinity, although it appears that they are inversely variable.

F-19407
Fokeev, N.V., **Relation of strength to density in antarctic summer sea ice,** Soviet antarctic expedition bulletin, Vol.92, 1976: selected articles. CRREL TL 654, Hanover, New Hampshire, U.S. Army Cold Regions Research and Engineering Laboratory, 1977, p.27-30, ADB-022 850L, For Russian original see 31-916 or F-17630.

Studies on antarctic sea ice revealed a direct linear relationship between stability and density. This is important not only from the viewpoint of the ice physicist but also from the engineer's, since it may facilitate the use of ice as a structural material.

F-19408
Fokeev, N.V., **Elasticity-strength relationship in the antarctic fast ice,** Soviet antarctic expedition bulletin, Vol.92, 1976: selected articles. CRREL TL 654, Hanover, New Hampshire, U.S. Army Cold Regions Research and Engineering Laboratory, 1977, p.31-34, ADB-022 850L, For Russian original see 31-917 or F-17631.

Highly correlated linear relationships exist between elasticity and stability of pack ice subjected to stress. This connection permits rapid calculation of ice properties of interest to engineers and navigators.

F-19424
Raynaud, D., **Gas content of ice caps** [Le gaz des calottes glaciaires], *Recherche*, Jan. 1977 8(74), p.81-84, In French. 6 refs.

Because of the flow of ice, samples obtained from various depths in an ice sheet differ in origin not only in respect of time, but also of location (horizontal and vertical). Isotope measurements from such samples, assuming certain hypotheses, can yield information on climatic changes, thickness of the ice sheet in geological times, and possible isostatic movements. Isotope measurements at Byrd Station indicate a decrease in the thickness of the ice sheet since the last glaciation. At Vostok Station the isotopic variation observed is due purely to climatic changes. A comparison of isotopic profiles at Byrd, Vostok and Camp Century, Greenland, shows that temperature variations associated with the last deglaciation are of the same order of magnitude for the two hemispheres.

F-19477
Swithinbank, C., **Glaciological research in the Antarctic Peninsula,** *Royal Society of London. Philosophical transactions.* 1977 Vol.279B, p.161-183, 50 refs.

A series of seven 1:250,000 map sheets was published which used satellite imagery as the only source for planimetric detail. In preparation for intermediate depth ice core drilling for glaciological and paleoclimatic investigations a wide-ranging program of radio echo

sounding has been pursued since 1963; flight tracks now total 80000 km. Track plotting was controlled by relating observed subglacial topographic features with the surface expression of the same features revealed in a Landsat image mosaic. Redefinition of the earlier speculative boundary of the inland ice sheet added 38000 sq km to the land area of Antarctica while reducing the area of Ronne Ice Shelf by 11%. Three major inlets contained the thickest floating ice ever measured. Floating ice 1860 m thick was identified at a point only 17 km from the Ellsworth Mountains. A radio echo sounder was adapted to measure the surface velocity of glaciers by reference to the spatial fading pattern of the bottom echo. Experiments on ice shelves have been used to extend the flow law of ice to stresses lower than can be studied in the laboratory. DDT concentrations were found to be 40-100 times smaller than earlier reported for snow from central Antarctica. An extensive reconnaissance programme of 10 m ice core drilling has been pursued with the object of studying relationships between oxygen isotope fractionation and ice and air temperatures. The ice, water, and energy balances of two representative local glaciers have been studied as a contribution to the International Hydrological Decade.

F-19510

Vaudrey, K.D., **Ice engineering—study of related properties of floating sea-ice sheets and summary of elastic and viscoelastic analyses,** *U.S. Naval Construction Battalion Center, Port Hueneme, Calif. Civil Engineering Laboratory. Technical report,* Dec. 1977 R-860, 81p., 33 refs.

This report summarizes approximately 12 yrs of research effort by the Civil Engineering Laboratory (CEL) for developing engineering data and analytical capability for calculating operational bearing capacity of sea-ice sheets. The objectives of the report are: (1) to summarize the CEL elastic and viscoelastic experimental programs; (2) to review the two CEL-developed finite-element techniques for analyzing the structural behavior of the material; and (3) to present bearing capacity limits for both short- and long-term ice-sheet operations. At the outset of this research program little engineering data and only limited analytical techniques were available to assist the practitioner in evaluating ice-sheet bearing strength. Though much still remains to be learned, it is now possible to make qualitative engineering predictions on bearing strength as a result of the comprehensive laboratory and field research program directed at defining the tensile strength, compressive strength, flexural strength, elastic modulus, creep behavior, and their relationship to temperature and salinity. Bearing strength analysis, using the CEL-developed finite-element computer codes, can now be based on the material properties corresponding to the actual temperature and salinity gradient existing across the vertical profile of the ice plate. (Auth.)

F-19520

Inoue, M., Fujino, K., **Measurements of drifting snow at Mizuho Camp, East Antarctica, 1974-75,** *Antarctic record,* Nov. 1977 No.60, p.1-12, 19 refs.

Measurements were carried out simultaneously of drifting snow and wind speed over the surface from 1974 to 1975 at Mizuho Camp using an improved drawer-type drift collector which had a collection efficiency of about 0.55. From the obtained profile of spatial distribution of drift mass flux, it is considered that a layer from the surface to a height of about 25 cm is the one in which the saltation of snow particles prevails and a layer on top of it is the one in which snow particles are suspended by turbulent diffusion. A significant correlation was found between the total drift transport and the wind speed at the height of 10 m above the surface. The total drift transport at Mizuho Camp evaluated from this correlation was about 640,000 tons/km/yr.

F-19521

Nagata, T., **Theoretical steady state profile of ice sheets (two-dimensional model),** *Antarctic record,* Nov. 1977 No.60, p.13-27, 4 refs.

Nye's kinematic theory of ice sheet profiles is revised on the basis of the conservation law of ice mass, because Nye's ice sheet model or the revised Haefeli's model does not satisfy the ice mass conservation law and therefore they cannot attain steady state. In the present revised theory, the ice sheet profile model satisfies the ice mass conservation within the ice sheet. In this model, the equilibrium point to separate the ablation area from the accumulation area is clearly defined, and the stream-lines of ice flow within the ice sheet are explicitly determined. It seems further that the agreement of the present steady state theoretical model of ice sheet profile with the observed data in Greenland is satisfactory. (Auth.)

F-19522

Hayashi, M., **On meltwater of snow patches in East Ongul Island, Antarctica,** *Antarctic record,* Nov. 1977 No.60, p.28-37, In Japanese with English summary. 8 refs.

Measurement of meltwater from snow patches was made in a small drainage basin near Syowa Station, East Ongul Island, Antarctica, during the period from December 12, 1975 to February 15, 1976, in order to obtain basic data for wastage of ice masses. 4,800 tons of snow disappeared from the basin during the observation period. Amount of meltwater was measured to be 3,100 tons in the same period. This fact may indicate that melting accounts for a quite large portion of wastage of snow patches in ice-free areas of polar regions. Investigation on the relationship between climatic elements and wastage showed that the amount of wastage depends mainly on the air temperature from January 1 to 19 when the temperature often exceeds the freezing point, but on solar radiation during the period from January 26 to February 15 when temperature rarely exceeds the freezing point. (Auth.)

F-19527

Matsumoto, Y., Manabe, M., Funaki, M., **Setting up a strain grid for measurement of glacier movement, Yamato Mountains, Antarctica, 1975-1976,** *Antarctic record,* Nov. 1977 No.60, p.93-99, 5 refs.

From Nov. 12, 1975 to Jan. 24, 1976 an oversnow traverse to the Yamato Mountains was conducted by a seven-man party of the 16th Japanese Antarctic Research Expedition for geological and geomorphological surveys, topographic surveying, search for the Yamato meteorites, and physiological investigation. Furthermore a strain grid was set up around A003 control point near Motoi Nunatak (A001 control point = No.214) for mechanism of meteorites concentration in the Meteorite Ice Field. A brief description of the traverse and the hexagonal grid, each side being about 800 m, is given here. (Auth.)

F-19545

Peel, D.A., **Snow accumulation, conductance and temperature inland from Halley Bay,** *British Antarctic Survey. Bulletin,* Nov. 1976 No.43, p.1-13, 19 refs.

Snow deposited in Antarctica incorporates a sample of the atmosphere which undergoes little change over long periods of time. Variations with place and time in the concentration of impurities in the snow may be related to the origin and mechanism of transport of these materials. Samples for geochemical analysis were collected from the upper 2 m. of the snow cover along a line stretching 450 km. inland from Halley Bay. Procedures appropriate to the subsequent analyses were used to minimize contamination during collection and transport of the samples. Accumulation profiles deduced from measurements of route-marking stakes were extended to cover the upper 2 m. of the snow cover by conventional stratigraphical methods. Closely spaced aneroid barometer measurements were used to gener-

ate a surface-elevation profile which can be correlated with snow temperatures at 10 m. depth. Further samples were collected to investigate the suitability of conductance measurements for identifying the season of deposition of snow strata. Techniques were developed for measuring the contribution of dissolved mineral salts to the conductance in the low range which was found more than 80 km. inland from the coast. This component, which is dominantly of marine origin, is seasonally variable and directly comparable with the stratigraphical profiles up to 200 km. inland. (Auth.)

F-19569

Cronk, C., **Glaciological investigations near the ice sheet margin, Wilkes Station, Antarctica,** Columbus, Ohio State University, 1968, 219p., University Microfilms order No.68-12,826, Ph.D. thesis. Refs. p.212-219.

Field studies near Wilkes Station during 1958 included pit and stake measurements, ice temperature measurements, movement and strain measurements, and limited gravity measurements, as well as more subjective observations of surface conditions on the ice sheet and meteorological observations. From the anlaysis of the weekly stake measurements the relative importance of the various processes of accumulation and ablation has been estimated at several locations, and reasons for the irregularities in the balance profile have been considered. Drift deposition is important in maintaining equilibrium near the ice margin. Velocity calculations at stake 402 and similar calculations at a point several km inland suggest that the basal velocity is zero. This is in agreement with rough calculations indicating that the basal ice remains below 0C for some 10's of km inland from the ice margin, making basal sliding within this region impossible. A computation of the flow line configuration, based on conditions at stake 402, suggests that debris can be raised to the surface within a distance of about 2 km and within a time interval on the order of 6,000 yrs. It is suggested that marginal moraine formation was initiated when the ice retreated to its present position as sea level rose at the close of the Pleistocene. This agrees with evidence from other ice-free areas in the Antarctic.

F-19576

Kotliakov, V.M., **Meeting of the Committee of the International Antarctic Glaciological Project (IAGP) in 1976** [Zasedanie soveta Mezhdunarodnogo antarkticheskogo gliatsiologicheskogo proekta (MAGP) v 1976 g.], *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭi. Khronika obsuzhdeniia,* Jan. 1977 Vol.29, p.38-42, In Russian.

At the 7th meeting of the coordinating committee of IAGP, held in Madison, Wisconsin, in Sept. 1976, Australia, France, the USSR, Great Britain, and the United States reviewed their work during the past year and outlined plans for the near future. Brief summaries of their statements and an overview of the way in which each plan relates to organization goals are offered.

F-19577

Dreĭer, N.N., **Program and instructions on the compilation of the world atlas of snow and ice resources** [Programma i metodicheskie ukazaniia po sostavleniiu atlasa snezhno-ledovykh resursov mira], *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭi. Khronika obsuzhdeniia,* Jan. 1977 Vol.29, p.53-187, In Russian. 93 refs.

This is a detailed plan for the compilation of a snow-and-ice-resources atlas of the world. The major topics to be covered are discussed and the approach to be taken set forth. Maps and charts to be included, scholars to be asked to participate, basic reference works to be consulted, and organizational arrangements to be implemented are outlined.

F-19584

Yoshida, Y., **Fluctuation of the antarctic ice sheet and the Quaternary,** *Quaternary research (Dai-yonki kenkyu).* Mar. 1977 15(4), Suppl., p.168-175, In Japanese with English summary. Refs. p.173-175.

The Quaternary researches in the Antarctic region are reviewed, with emphasis on the fluctuation of the ice sheet. In the McMurdo Sound region, where the largest ice-free area in Antarctica offers an important field to students of earth sciences, the chronology of interaction among the East Antarctic Ice Sheet, the Ross Ice Shelf and independent alpine glaciers seems to have been established. However, recently distinguished marine sediments in the dry valleys would open the new stage for the re-evaluation of glacial events in the region. On the other hand, glacial history in other regions of Antarctica was based on relative chronology. Almost all the correlations are tentative. The problem of disintegration of the West Antarctic Ice Sheet during the interglacials and the post glacial of the Northern Hemisphere is probably another focus of discussion. The Hollin's hypothesis that the waxing and waning of the ice sheet is controlled primarily by the eustatic changes in sea level should be prudently applied to the East Antarctic Ice Sheet. (Auth.)

F-19676

Stuiver, M., Denton, G.H., **Glacier history of the McMurdo Sound region,** *Antarctic journal of the United States.* Oct. 1977 12(4), p.128-130, 7 refs.

Projects performed during the 1976-77 field season in the McMurdo Sound region included mapping, soil sampling, sediment analysis, and C-14 dating of *Adamussium colbecki* and algae. The chronology of recession of the last grounded ice sheet to occupy McMurdo Sound is outlined based on the C-14 dating results. The dates suggest that final ice recession from New Harbor occurred between 8340 and 6670 C-14 years ago.

F-19677

Raymond, C., **Finite element calculation of ice deformation,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.130-131, 5 refs.

This report describes progress on the development of four types of finite element computer programs for the calculation of deformation of ice masses. Programs were designed for glacier rectilinear flow, glacier plane strain-rate flow using quadrilateral elements, glacier plane strain-rate flow using full depth elements, and ice shelf deformation. The uses for the various programs are outlined.

F-19678

Risebrough, R.W., **Investigations at dome C in the austral summer of 1976-1977,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.131-132, 11 refs.

Studies at dome C are concerned with historical changes in the chemical composition of snow. These changes reflect past alterations in the chemistry of the atmosphere in the pre-industrial era or over the past several decades. Recent changes in the chemical environment due to atmospheric fallout and to atmospheric dispersal of DDT and polychlorinated biphenyl (PCB) compounds have been demonstrated. It may also be assumed that the chemical composition of the surface snow at dome C has been altered due to the disablement and recovery of three airplanes in the area over the period 1975-77. It is expected that the studies of synthetic organic compounds will aid in determining the usage and input of DDT and PCB into the environment and what other synthetic organic compounds or petroleum-derived materials are dispersed through the atmosphere. The strata at dome C deposited before 1975 and after 1977 should contain only pollutants from global sources, while snow deposited during 1975-77 would provide an indication of the impact of local human activities. Difficulties encountered during investigations are summarized.

F-19679
Parker, B.C., Zeller, E.J., Heiskell, L.E., Thompson, W.J., **Nitrogen in south polar ice and snow: tool to measure past solar, auroral, and cosmic ray activities,** *Antarctic journal of the United States.* Oct. 1977 12(4), p.133-134, 17 refs.

Sections of South Pole ice core collected in 1974 were analyzed for nitrogen concentration. The data obtained on NO3-N and NH4-N show level fluctuations which are believed to reflect changes in the rates of nitrogen fixation in the upper atmosphere perhaps along with some second- and third-order effects. Moreover the 11-yr cycles of sunspots, auroral activity, and cosmic ray fluxes may be related to the concentrations of NO3-N and/or NH4-N found in South Pole snow. Failure to detect NO2-N and the detection of NH3-N may appear to differ from the report of Wilson and House (1965). A possible explanation for these differences is offered. It is suggested that the potentials for using ice analyses of this type to evaluate past sunspot activities, ice core ages, past world climate, or the contribution of nonbiological nitrogen fixation to the biosphere deserve further investigation.

F-19680
Lettau, H., **Thermal response to albedo reduction on antarctic snow—modeling results,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.134-136.

Details are given of a climatonomical model suitable for calculating thermal response of antarctic snow surfaces caused by albedo reduction. Climatonomical modeling is based on the energy budget of the air/ground interface. A model simulation of present and modified conditions shows that albedo reduction increases primarily the summer temperatures, but due to the melt-induced feedback, the winter temperatures are also significantly milder. The change from negative to positive annual averages of heat convection indicates that heat is exported from the modified region, while heat was imported under initial conditions.

F-19681
Thompson, E.M., Thompson, L.G., **Microparticle analysis of the 101-meter South Pole ice core,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.136-137, 3 refs.

A total of 6,218 samples representing the entire South Pole 101-m core have been analyzed for microparticle concentrations and size distributions. The objectives of the research are to test the feasibility of microparticle variations for dating cores from regions of low annual accumulation, obtain a continuous reeord of atmospheric turbidity over the last 1,000 yr, examine the variation in accumulation rates over the last millenium, ascertain turbidity changes due to increased industrial activities over the last hundred years and investigate possible changes in the elemental content of the aerosols, and examine variations in particle concentrations, size distributions, and elemental compositions before, during, and since the Little Ice Age. The assumption of an annual microparticle concentration peak is probably valid for the South Pole site. It appears that atmospheric turbidity at the South Pole was greatly increased during the Little Ice Age.

F-19682
Kovacs, A., Gow, A.J., **Dielectric constant and reflection coefficient of the snow surface and near-surface internal layers in the McMurdo Ice Shelf,** *Antarctic journal of the United States,* MP 1011, Oct. 1977 12(4), p.137-138, 9 refs.

An impulse radar system was used to profile the shape and lateral extent of the brine layer in the McMurdo Ice Shelf. A small antenna was also used to determine if reflective layers could be detected in the upper 5 m of snow. The radiated impulse center frequency was 626 megahertz with an estimated frequency spectrum of 375 and 875 at the -3 decibel points. The measurement technique is described. The study indicates that layers of dielectric discontinuity can be detected at shallow depths in polar snow. The shallow depth at which the internal layers were detected suggests that they represent density variations in the snow, perhaps associated with summer melt features less than 5 mm thick.

F-19683
Kukla, G.J., **Antarctic pack ice cover variations,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.138-140, 6 refs.

Tentative results of investigations of seasonal and year-to-year variations of pack cover in the Southern Hemisphere are summarized. The buildup of ice fields from the Feb. minimum between 3 and 4 million sq km to the Sep. maximum of up to about 20 million sq km is relatively slow. In Aug. the inner pack is closed, with less than 3 to 5% open water. A rapid dissipation of the pack begins in Nov. and continues through Jan. Secular changes of the pack-ice area between 1967 and 1977 are plotted. The peak annual averages were reached in 1971-73, in phase with the maximum snow coverage in the Northern Hemisphere.

F-19684
Kovacs, A., **Iceberg thickness profiling using an impulse radar,** *Antarctic journal of the United States,* MP 1012, Oct. 1977 12(4), p.140-142, 5 refs.

Thickness measurements taken on a 100 to 500 m tabular iceberg in McMurdo Sound using an impulse radar system are discussed and illustrated. Calculated depths of the brine layer at the south and north ends of the iceberg were 13.7 and 17.4 m, respectively. The calculated thickness of the iceberg at station 4.5 and stations 5 through 17 ranged from 90.0 to 60.5 m. The apparent freeboard-to-thickness ratio was 1 to 5.2, which is higher than the 1 to 3.6 freeboard-to-thickness analysis of Gow (1968; F-6274) for antarctic ice shelves of similar thickness. The data suggest a glacial rather than a shelf origin.

F-19685
Clough, J.W., **Ross Ice Shelf Project, 1976-1977,** *Antarctic journal of the United States.* Oct. 1977 12(4), p.142.

Ross Ice Shelf Project drilling was begun this season at drill camp J-9. Thirty-four strain networks in the Roosevelt I. area were remeasured as part of the Ross Ice Shelf Geophysical and Glaciological Survey program and 80 new survey sites were visited in the C-16 camp area. Three small camps were established for meteorological and tidal gravity programs, and field camps were established on Roosevelt I. and at site C-7, where shallow drilling was done and ice cores collected.

F-19686
Bentley, C.R., Jezek, K.C., **Ross Ice Shelf geophysical survey, 1976-1977,** *Antarctic journal of the United States.* Oct. 1977 12(4), p.142-144, 6 refs.

Geophysical work on the Ross Ice Shelf during the 1976-77 season included radio echo sounding, ice thickness profiling, wide-angle radar reflection profiles, experiments with collinear radar antennas, seismic P-wave refraction and S-wave short refraction, water depth sounding, a gravity survey, electrical resistivity profiles, ultrasonic wave velocity measurement, and a complete radar polarization experiment. Electrical resistivity profiling at Roosevelt I. base camp confirms the existence of a basal resistive layer in the ice shelf as previously reported.

F-19687
Thomas, R.H., MacAyeal, D.R., **Glaciological measurements on the Ross Ice Shelf,** *Antarctic journal of the United States.* Oct. 1977 12(4), p.144-145, 8 refs.

Strain-rate measurements on the surface of the Ross Ice Shelf were continued during the 1976-77 austral summer. Tasks included

remeasurement of already-planted rosettes and installation of approximately 100 new rosettes to complete the survey in the western half of the ice shelf. Preliminary analysis of Ross Ice Shelf Geophysical and Glaciological Survey data from the southeast corner of the ice shelf revealed an apparent thickening with time of the ice in this region. Average thickening rates upstream of Crary Ice Rise are calculated to be about 0.3 m of ice per year, decreasing toward the north so that, near the Ross Ice Shelf Project drill-hole, the ice shelf is approximately in equilibrium.

F-19688

Stauffer, B., Moell, M., **Geochemical and isotope studies, Ross Ice Shelf Project,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.145-146, 2 refs.

The scientific objective of this study is to determine the age of the ice shelf at different depths and the time elapsed since the water beneath the shelf has been in contact with the atmosphere. A silicon sample extracted from 600 liters of water pumped up from the water well (45 m below the surface) and its corresponding reference sample obtained from suface snow should yield information on long term accumulation rates. A sea-sampling program was conducted on the McMurdo annual sea ice. Sea water will be analyzed for gas content.

F-19689

Kovacs, A., Gow, A.J., **Subsurface measurements of the Ross Ice Shelf, McMurdo Sound, Antarctica,** *Antarctic journal of the United States,* MP 1013, Oct. 1977 12(4), p.146-148, 2 refs.

Depth characteristics, lateral continuity, and inland boundary of sea water infiltration in the McMurdo Ice Shelf were monitored using a dual-antenna impulse radar profiler. The studies have provided new information on the brine infiltration zone, including data on changes in the elevation of the brine-soaked layer and ice shelf thickness as a function of distance from the shelf edge. The features of the brine layer are described and illustrated. Observations on the glacial ice/saline-ice transition on the Koettlitz Glacier tongue are summarized.

F-19690

Kohnen, H., Bentley, C.R., **Ultrasonic measurements on ice cores from Ross Ice Shelf, Antarctica, drill hole,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.148-150, 12 refs.

The field operations, techniques, and results of ultrasonic measurements on ice cores recovered from the Ross Ice Shelf during the 1976-77 field season are summarized. Measurements were done in a mobile laboratory van using a Krautkrämer USIP 11 system with barium titanate transducers. Vertical and horizontal P-wave velocities are plotted vs depth. The most distinctive feature is the large range over which the velocities vary for each sample. The explanation for this range probably lies in crystal size. The velocities from each sample are averaged and plotted against depth along with a plot of a smoothed velocity-depth curve from refraction shooting at J-9 during 1976-77. Both sets of data show a close approach to maximum velocity at a depth as shallow as 50 m, but the ultrasonic velocities are significantly higher than the field measurements at all greater depths (mean for 150 to 155 m is 3,879 m/sec).

F-19691

Rand, J.H., **Ross Ice Shelf Project drilling, October-December 1976,** *Antarctic journal of the United States,* MP 1061, Oct. 1977 12(4), p.150-152, 4 refs.

The wire line core drilling system used for the Ross Ice Shelf Project and the problems encountered in using the equipment are described. The proposed plans included drilling four holes: the water well hole, Bern hole, core hole, and access hole. The generally unsuccessful operations during the season indicated that it is not feasible to drill an open hole through the Ross Ice Shelf due to closure of the drilled hole as a result of the flowing characteristics of ice.

F-19692

Langway, C.C., Jr., Herron, M.M., **Polar ice core analysis,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.152-154, 14 refs.

The polar ice core analysis program is concerned with investigations of the physical properties and chemical constituents of the shallow, intermediate, and deep ice cores on the Greenland Ice Sheet, on the Ross Ice Shelf and at other antarctic locations. Activities of the 1976-77 initial field season included two independent remote shallow core (50-m) drilling operations on the Ross Ice Shelf, participation in the Ross Ice Shelf Project at site J-9, and sample collections at various other ice shelf locations. The results of the operations are summarized. Physical property study of the J-9 core showed an abnormally high rate of densification in the 40 to 90 m depth interval, air bubbles stretched and alined parallel to the snow surface, a rapid increase in crystal size and a preferred crystallographic orientation. The geochemical investigations have permitted estimates to be made on the influence of sea salt and continental dust sources on the various glaciochemical regimes of Antarctica.

F-19693

Langway, C.C., Jr., Chiang, E., **Central ice core storage facility and information exchange,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.154-156, 5 refs.

The ice core storage facility at New York State University is responsible for processing, cataloging, and distributing ice cores drilled in Antarctica, Greenland, and other polar regions to approved recipients. Most of the cores are stored in a commerieal freezer, a curator arranges for redistribution of cores, and a data bank is maintained for each core. New ice cores and snow samples were obtained in Antarctica during the 1976-77 austral summer at sites J-9, C-7, and at the Roosevelt I. dome. An inventory is given of arctic and antarctic cores. Approx 675 m of new shallow ice cores have been recovered from both northern and southern polar ice sheets during this reporting period, 200 m from Antarctica.

F-19703

Greenler, R., **Optical effects resulting from airborne ice crystals,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.168-170, 6 refs.

A method of computer simulation has been developed with which to study the optical effects of ice crystals in the sky. The basic calculation is to determine the direction of a light ray after passing through a hexagonal crystal, starting with a particular orientation of the crystal and a particular elevation of the sun. When the calculation is repeated many times, each time for a different crystal orientation, the result is a spot diagram plotted on paper that represents the light intensity pattern in the sky that would result from a skyful of crystals with the range of orientations given. Comparison of these spot patterns with the observed phenomenon indicates the validity of the proposed model.

F-19706

Ackley, S.F., **Sea ice studies in the Weddell Sea region aboard USCGC *Burton Island*,** *Antarctic journal of the United States,* MP 1014, Oct. 1977 12(4), p.172-173, 2 refs.

Sea ice studies in the Weddell Sea aboard *Burton Island* consisted of ice salinity measurements on meltwater from ice cores and thickness measurements taken in drilled holes. Floes in the northern region were generally thicker than 2 m and in two regions exceeded 3 m on average. At higher latitudes in the middle of the Weddell Sea ice thicknesses exceeded 3.5 m. The thinnest ice was measured at

the southernmost locations. It is concluded that advection is an important component in accounting for ice distribution in the Weddell Sea. *In vivo* fluorescence measurements of core meltwater revealed apparent relationships between ice salinity and biological activity (ice algae).

F-19755
Kovacs, A., **Iceberg thickness profiling,** MP 1019, International Conference on Port and Ocean Engineering Under Arctic Conditions, 4th, St. John's, Sept. 26-30, 1977, Vol.2, Memorial University of Newfoundland, 1978, p.766-774, 16 refs.

Results obtained with an impulse radar system used to profile the thickness of a tabular iceberg in McMurdo Sound, Antarctica, and an ice island in the Beaufort Sea near Flaxman Island, Alaska, are presented. Graphic records are shown of the radar impulse travel time which clearly reveal, for the first time, the bottom relief of each ice formation. Also detected and shown are echo signatures from internal cracks and an infiltration-brine layer. The time of flight of the radar impulse in the ice island is compared with a 24.05-m drill hole measurement of the ice thickness. The effective velocity of the radar impulse in the ice island was found to be 0.16 m/ns and the effective dielectric constant of the ice to be 3.5. (Auth.)

F-19758
Radok, U., **Snow drift,** *Journal of glaciology,* 1977 19(81), p.123-139, In English with French and German summaries. Refs. p.134-136.

Snowdrifts represent a problem in the applied glaciology of most high-latitude regions, including Antarctica. Buildings and other structures could be obliterated by snowdrift. An important factor of this process is the fall-out of snow in the retarded flow on the windward side of the structure. Some recent attempts to measure and calculate that fall-out are discussed. Drift processes, related to wind velocity and height, were measured, and theories of snow drift are discussed.

F-19784
Timokhov, L.A., **Problems of sea ice cover studies,** *Problems of the Arctic and the Antarctic, collection of articles,* 1977 Vol.47, p.29-42, TT-76-52038, For Russian original, see 31-252 or F-17383. 25 refs.

This article presents a review of theoretical research problems related to sea ice. Questions in various disciplines pertaining to sea ice are discussed in terms of organization and implementation of the POLEX program.

F-19788
Baranov, G.I., Ivchenko, V.O., Maslovskiĭ, M.I., Treshnikov, A.F., Kheĭsin, D.E., **Wind drift of antarctic sea ice,** *Problems of the Arctic and the Antarctic, collection of articles,* 1977 Vol.47, p.136-159, TT-76-52038, For Russian original, see 31-256 or F-17387. 13 refs.

Using a hydrodynamic ice drift model which allows for the interaction of icebergs among themselves, general schemes for average monthly ice circulation around Antarctica are given. A companion chart of solid and breakup zones is also included. The possibility of drawing up a map of solid ice zones based on the records of the forced drift of the *Ob'* in 1973 is discussed.

F-19795
Krass, M.S., Shumskiĭ, P.A., **Thermodynamic model of an external ice shelf** [Thermodynamisches Modell eines äusseren Eisschelfs], *Polarforschung,* 1976 46(1), p.34-45, In German with Russian and English summaries. 5 refs.

The boundary problem for the non-linear integro-differential equation governing the temperature in a quasi-steady external ice shelf is solved by means of matching asymptotic expansions. It is shown that stability of the thermal regime exists only if streamlines pass through both the glacier surfaces, because in this case the advection removes the heat dissipation by internal deformation. In the case of ice moving in opposite directions from the upper and lower surfaces the regime would be unsteady because of internal heat accumulation.

F-19801
Whillans, I.M., **Equation of continuity and its application to the ice sheet near "Byrd" station, Antarctica,** *Journal of glaciology,* 1977 18(80), p.359-371, 41 refs., In English with French and German summaries.

The continuity relationship that is often used in the study of ice sheets and ice shelves is developed by integrating the equation of continuity through the ice thickness. This equation is then integrated again with respect to horizontal distance from an ice divide, showing that the difference between the true ice velocity and the balance velocity, which is defined, is a measure of the time change of the mass of a column through the ice thickness. The relationship is applied using data from along the Byrd Station strain network, Antarctica. This region is found to be thinning slowly and uniformly, but it is still close to steady-state. The calculations would show a larger thinning rate if bottom sliding contributed more to the ice movement and integral shear contributed less, but the Byrd Station bore-hole tilting results of Garfield and Ueda (1975, 1976), together with surface velocity measurements at Byrd Station, indicate the most of the ice flow is by deformation within the ice mass. This large amount of internal deformation is more than that predicted by most "flow laws", probably because of the strongly oriented ice-crystal fabric in the ice sheet. The cause of ice thinning is probably decreased surface mass balance beginning before A.D. 1550. (Auth. mod.)

F-19818
Tsuchiya, K., **Measurement of snow and ice through artificial satellites,** *Seppyo,* Dec. 1977 39(4), p.22-30, 9 refs., In Japanese.

On the basis of NIMBUS and LANDSAT imagery the use of satellite data to determine snow and ice distribution is discussed. Diagrams show snow areas in the northern hemisphere and variations of ice extent in the Antarctic. Distinctive features of one-year and multi-year ice are also illustrated.

F-19819
Ishida, T., ed, **Glaciological studies in Mizuho Plateau, East Antarctica, 1969-1975,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Jan. 1978 No.7, 274p., Refs. passim. For individual papers see 32-2702 through 32-2720, or F-19819 through F-19822, F-19824, F-19825, F-19827, F-19830, F-19831 through F-19840, I-19826, I-19828, I-19829, and L-19823.

Results of the traverse project of the Glaciological Research Program in Mizuho Plateau are presented. The report covers the period 1969-1975 and is arranged in five sections, dealing with geomorphological analysis of the ice sheet, climatic conditions, snow accumulation, ice sheet flow, and geochemical analysis, each section containing several papers.

F-19820
Shimizu, H., **Outline of studies of the glaciological research program in Mizuho Plateau, East Antarctica, 1969-1975,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Jan. 1978 No.7, p.1-13.

The purpose of the 1969-75 glaciological research program was to study the mass balance of the ice sheet in Mizuho Plateau. The program was composed of two major projects: 1) glaciological, meteorological, geographical, geophysical and geochemical studies by means of oversnow traverses by JARE-10, 11, 14 and 15, and 2) a pilot study of deep cores of the inland ice sheet by means of drilling and analyses by JARE-12, 13, 15 and 16. The program included studies of the morphology of the ice sheet, climatic conditions, snow accumulation, ice sheet movement, the geochemistry of the ice sheet, and geophysical surveys.

F-19821

Shimizu, H., Yoshimura, A., Naruse, R., Yokoyama, K., **Morphological feature of the ice sheet in Mizuho Plateau,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Jan. 1978 No.7, p.14-25, 19 refs.

The morphological features of the ice sheet in Mizuho Plateau are described by the use of data on the elevation and maximum slope of the surface and thickness of the ice sheet obtained by oversnow traverses of the Japanese Antarctic Research Expeditions. A surface topographical map of Mizuho Plateau is also shown. The upper boundary of the katabatic wind region was estimated at about 3100 m from the distribution of the gradient of the ice sheet surface by applying Ball's theory (1960) to the data. The mean thickness of the ice sheet in Mizuho Plateau was 1650 m, while the maximum was 3870 m. Local trends of the bedrock surface were observed using cross-sectional profiles of the ice sheet. Mizuho Plateau was divided into subdivisional drainage basins of the ice sheet. It was estimated that the Shirase drainage basin, the largest one in this province, had an extent of 200 thousand sq km in area, and stored ice amounting to 320 trillion t in weight. (Auth. mod.)

F-19822

Yokoyama, K., **Distribution of surface structures of the ice sheet in Mizuho Plateau,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Jan. 1978 No.7, p.26-36, 20 refs.

Among the structural phenomena on the ice sheet, the structures with the dimensions of 10-10,000 m are called here "surface structures". The surface structures were classified into five major groups, according to their physical characteristics, A) flat surface, B) undulation (isolated), C) undulation (grouped), D) crevasse and crack, E) moraine and muddy band. These structures are made mostly by deformation of ice caused by movement of an ice sheet. Thus the distribution of the surface structures would be a reflection of the stress condition of the ice sheet; stress condition is controlled by ice thickness, flow velocity and bedrock topography. Referring to steepness and frequency of surface structures, Mizuho Plateau was divided into four subdivisional regions: coastal region, transitional region, inland region and mountainous region. The surface structures in the coastal region and in the vicinity of exposed land are steeper and more frequent than those inland. Such variation of the features of the surface structures is well explained by the distribution of the above-mentioned three factors which control the stress condition of the ice sheet. This paper is an approach to a study on the dynamics of the ice sheet. (Auth. mod.)

F-19824

Watanabe, O., **Distribution of surface features of snow cover in Mizuho Plateau,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Jan. 1978 No.7, p.44-62, 15 refs.

Surface features are genetically classified into three categories: depositional form, erosional form, and long-term hiatus form which is widely distributed as a glazed surface and is related closely to the absence of annual layers. The present paper describes the first attempt to discuss the characteristics of these surface features and their significance in the surface condition and snow stratigraphy. Prevailing wind systems of Mizuho Plateau related to erosion and deposition processes are analyzed from the directional aspect of the surface features. It is found from the analysis that the one- and two-wind systems are related to the depositional and erosional processes and that a variation of wind system can almost correspond to that of surface condition. Mizuho Plateau can be divided into four regions on the one hand on the basis of the regional characteristics of the surface condition which is related closely to the mass budget mechanism of each region. Mizuho Plateau can be divided, on the other hand, into three regions on the basis of the regional characteristics of the mass balance. It can be estimated that their boundaries exist at 1800 m and 3000-3200 m in elevation above sea level. (Auth. mod.)

F-19825

Satow, K., **Distribution of 10 m snow temperatures in Mizuho Plateau,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Jan. 1978 No.7, p.63-71, 20 refs.

Measurements were made of snow temperature at a depth of 10 m beneath the surface during the oversnow traverses in 1968-1975 in the region of Mizuho Plateau. The mean annual surface temperature estimated from the 10 m snow temperature decreases gradually from the coast to the inland, which mean temperature gradient with elevation is close to the dry adiabatic lapse rate in the area between 0 m and 3000 m and its value in the area between 3000 m and 3800 m is larger than -2C/100m. A map of mean annual isotherms shows that the isotherms are similar to elevation contours, especially in the area lower than 3000 m. (Auth.)

F-19827

Narita, H., **Controlling factors of drifting snow,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Jan. 1978 No.7, p.81-92, 8 refs.

A series of observations of drifting snow was carried out at Mizuho Camp during the wintering of the 13th Japanese Antarctic Research Expedition (1972-1973). The collectors used in this work were a box-type drift gauge and Mellor's saltation gauges, whereby measurements were made on the amount of snow drift transport, the saltation length of snow particles and their rebound mass under different conditions of the snow surface. The amount of snow drift transport Q (g/m.s) was represented by the relation log $Q=(0.17\text{-}0.22)V\text{-}(0.2\text{-}0.4)$, where V represents the wind speed in m/s from the results measured by these drift gauges. The saltation length was less than 75 cm on a soft snow surface with dunes, barchans, etc., and more than 100 cm on a hard snow surface with sastrugi, glazed surface. It was also found that the saltation length became longer and the amount of snow drift transport increased as temperature decreased. (Auth.)

F-19830

Yokoyama, K., Satomi, M., Watanabe, O., Ohata, T., **Accumulation and ablation at Syowa Station,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Jan. 1978 No.7, p.115-124, 11 refs.

The results of the observations of accumulation and ablation in the period 1968-1975 in the vicinity of Showa Station are summarized. There were two typical areas on sea ice; one was the area characterized by the accumulation of several tens cm and situated near the obstacles to wind such as islands or icebergs, and the other characterized by little accumulation, free from such obstacles. The process of ablation can be separated into two stages by the critical temperature of -3C in daily mean air temperature. Ablation was related to meteorological factors and the relation between ablation and daily mean air temperature was formulated. The depth of snow to be melted in one summer period was estimated at 1184 mm as the average of five summer periods from 1968-1969 to 1972-1973. Ablation

on East Ongul Island was about three times that on sea ice. This difference may be explained by the effect of bare ground as a heat source. (Auth. mod.)

F-19831

Yamada, T., Okuhira, F., Yokoyama, K., Watanabe, O., **Distribution of accumulation measured by the snow stake method in Mizuho Plateau,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Jan. 1978 No.7, p.125-139, 19 refs.

The seasonal and the annual variations of accumulation of snow and its regional distribution were measured by means of snow stakes distributed along the various traverse routes in Mizuho Plateau in 1968-1974. The deposition of snow occurs mainly in the winter season from Feb. to Sep.; on the contrary, the erosion of snow occurs in the summer season from Nov. to Jan. Maximum values of accumulation rate were found at both the equinoxes. As for the coastal region between 1000 m and 1700 m a.s.l., the maximum annual accumulation during seven years from 1968 to 1974 was observed in 1970, which is about 2.5 times larger than the minimum which was observed in 1969. The firn line and the dry snow line are located in Mizuho Plateau, respectively at 400-500 m at 700-1000 m a.s.l. As for the region between 1700 m and 3500 m a.s.l., hiatuses in accumulation were usually found. The modes of regional distribution of annual accumulation differ sharply from each other among the five regions, which are divided at the boundaries located at 400-500 m, 700-1000 m, 1700-1900 m and 3400-3500 m a.s.l. (Auth.)

F-19832

Okuhira, F., Narita, H., **Study of formation of a surface snow layer,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Jan. 1978 No.7, p.140-153, 17 refs.

The process of surface layer formation was observed in Mizuho Plateau from the coast inland, including Mizuho Camp at the elevation of 2169 m above sea level, by measuring a net snow accumulation at three stations, each with a pair of 100-stake lines set up, each line perpendicularly intersecting, and each stake aligned at a 1 m interval, and at six stations, each with a stake farm consisting of 36 stakes spaced 20 m apart in a 100 m square grid. The observations disclosed that the characteristics of deposition-erosion process at the surface vary with time and place, that a surface layer is formed annually all over the site of H180 (1540 m) and its vicinities, sporadically at and near S122 (1853 m), as well as Mizuho Camp where either one or no annual layer was formed during a three-year period, the width of such a layer being less than 15 m in most cases, and that the formation of a dune, one of the depositional phenomena, is closely related to the temporal variation of wind associated with the occurrence of a cyclone. A proposal is made in this paper for categorizing the process of surface layer formation into three types. (Auth.)

F-19833

Watanabe, O., **Stratigraphic studies of the snow cover in Mizuho Plateau,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Jan. 1978 No.7, p.154-181, 19 refs.

The snow cover of Mizuho Plateau is basically composed of the unit layer (minimum structural units) and the layer boundaries caused by hiatus phenomena. The natures of these two stratigraphic elements are revealed through studies of structural and physical properties, as well as oxygen isotope ratios. In the high accumulation region lower than 1700-2000 m a.s.l., the characteristics of the unit layer corresponded well to the seasonal changes of climatic conditions. In the inland region of less accumulation, the hiatus frequently occurs in the formation of the annual layer and almost all of the stratigraphic elements are strongly deformed by metamorphic processes. Determination of the annual accumulation rate was investigated by means of the stratigraphic interpretation, seasonal variation of oxygen isotope ratios and detection of the reference horizons by vertical profiles of gross beta activity. The oxygen isotope method is not so effective in the estimation of the annual accumulation rate in areas other than high accumulation region. Accumulation shows a regional distribution such as 60 cm snow per year in the coastal region and 15 cm snow per year at 3400 m a.s.l. According to the regional variation of snow stratification, the snow cover in Mizuho Plateau is divided characteristically into three regions with elevation boundaries lying in 1900-2100 m and 2800-3200 m a.s.l. (Auth. mod.)

F-19834

Yamada, T., Watanabe, O., **Estimation of mass input in the Shirase and the Sôya drainage basins in Mizuho Plateau,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Jan. 1978 No.7, p.182-197, 29 refs.

The amount of mass input was estimated for the Shirase and the Sôya drainage basins in Mizuho Plateau, using surface mass balance data obtained by means of snow stake measurements and stratigraphic analysis performed over seven years from 1968 to 1974 in consideration of the regional characteristics of the balance as a function of elevation, the influences of the topography of the ice sheet on the balance and the annual variations of the balance. The Shirase and the Sôya drainage basins are, respectively, 200,000 and 22,00 sq km in area; 20.8 and 5.9/Gta in estimated maximum mass input; 4.6 and 0.1/Gta in estimated minimum mass input; 12.7 and 3.0/Gta in hypothetic average of mass input, which correspond to 64 and 150/kg/sq m/a in balance. (Auth. mod.)

F-19835

Naruse, R., **Surface flow and strain of the ice sheet measured by a triangulation chain in Mizuho Plateau,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Jan. 1978 No.7, p.198-226, 24 refs.

Surveys of a triangulation chain extending 250 km along the parallel of 72S in Mizuho Plateau were carried out in 1969 and 1973-1974. Obtained from them were horizontal and vertical components of surface velocities of the ice sheet at 141 stations and also principal strains, maximum shear strains, dilatations, and rotations of the surface ice in 140 triangles of the chain. Horizontal velocities of the ice sheet showed small values in the vicinity of the Yamato Mountains, and maximum values of more than 20 m/year in a region between 39E and 40E. Direction of the flow vector was approximately identical with that of the large-scale maximum slope of the ice surface, but the direction and magnitude of the principal strain showed influence by small-scale surface undulations. In general, the direction of the maximum extension of strain was rather close to that of the ice flow. Tensile strains were more common than compressive strains almost all over Mizuho Plateau. The vertical component of ice velocity was directed downward, which is characteristic of the submergence flow, in the region from 39E eastward. The amount of snow accumulation was not enough to compensate the deficit of ice mass caused by the submergence flow along the triangulation chain. The mass budget was negative in the zone of 2400-2600 m in elevation in the Shirase drainage. (Auth.)

F-19836

Naruse, R., Shimizu, H., **Flow line of the ice sheet over Mizuho Plateau,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Jan. 1978 No.7, p.227-234, 11 refs.

Flow lines of the ice sheet surface in Mizuho Plateau were deduced from the results of observations of topographic features of the surface and measurements of surface flow of the ice sheet. This paper gives the distribution of paths of ice flow over Mizuho Plateau, and

also the results of surface strains of the ice sheet measured by the square strain grids. Tensile strains whose directions were roughly parallel to the directions of the ice flow were predominant almost all over Mizuho Plateau. Considerably larger compressive strains were observed in regions with remarkable surface depressions such as Mizuho Camp. The ice mass of 4.5 trillion tons a year was estimated to pass across the vertical cross section along Route A (from A033 to S240), while 3 trillion tons a year discharged across Route S (from S124 to S240), both towards the Shirase Glacier. (Auth. mod.)

F-19837

Nakawo, M., Ageta, Y., Yoshimura, A., **Discharge of ice across the Sôya Coast,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Jan. 1978 No.7, p.235-244, 12 refs.

The flow velocity of about 2500 m/year was obtained for the Shirase Glacier by the analyses of aerophotographs taken in 1969 and 1975. Thicknesses of icebergs near the termini of the glaciers located along the Sôya Coast were also obtained from the shadows on aerophotographs. These data made it possible to estimate the amount of discharge of ice more accurately than ever made. The total discharge from the Mizuho Plateau area across the Sôya Coast is estimated at approximately 8.9 trillion t/year, which comprises 7.4 trillion t/year from the Shirase Glacier and 1.5 trillion t/year from other glaciers and the ice sheet. (Auth.)

F-19838

Kato, K., Watanabe, O., Satow, K., **Oxygen isotopic composition of the surface snow in Mizuho Plateau,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Jan. 1978 No.7, p.245-254, 21 refs.

Oxygen isotopic compositions of new-fallen snow collected at Showa Station, and drifting snow at Mizuho Camp and various stations in Mizuho Plateau were determined. Daily variation of oxygen isotopic composition of new snow at Showa Station is caused mainly by the supply of O-18-rich water vapor according to the approach of a cyclone. Seasonal variations of oxygen isotopic compositions of new snow at Showa Station and of drifting snow at Mizuho Camp are controlled not only by the seasonal variation of atmospheric temperature, but also by the transportation of water vapor to Showa Station and Mizuho Camp varying with the distance from the coast of open sea. Oxygen isotopic compositions of drifting snow at the stations at elevations below 1000 m are almost independent of elevation. At elevations between 1000 and 2900 m, oxygen isotopic compositions of drifting snow against elevation show a fairly linear relationship. At elevations between 3200 and 3300 m, a large anomaly is found in the variation with elevation of oxygen isotopic composition of drifting snow. The area where the anomaly is found is considered to be the boundary between the spheres of influence of maritime cyclone and Antarctic anticyclone. The drifting snow does not reflect the daily variation of meteorological condition and is of relatively local origin. (Auth.)

F-19839

Murozumi, M., Nakamura, S., Yoshida, Y., **Chemical constituents in the surface snow in Mizuho Plateau,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Jan. 1978 No.7, p.255-263, 12 refs.

Chemical features and profiles of the ice sheet in Mizuho Plateau have been revealed by means of newly developed analytical techniques such as atomic absorption spectrophotometry, neutron activation method and isotope dilution mass spectrometry. The chemical concentration is as low as ppb level even for the major components, Na, K, Mg and Ca, and its distribution is homogeneous in the surface sheet but shows much vertical complexity. Silicate dusts which functioned as the condensation nuclei for the formation of snow crystals in the upper atmosphere and which were captured by the snow fall process are poor, while sea salts account for more than 90 per cent of the total weight of components. Annual accumulation of chemical components, microg/sq cm, is 0.1 for silicate dusts and 0.40, 0.03, 0.1 and 0.06 for Na, K, Mg and Ca originated from the latter source. Annual accumulation of Hg and Pb is at the level of 0.1 and 1.5 ng/sq cm at the present time in contrast to 0.02 and 0.3 ng/sq cm in ancient times. (Auth.)

F-19840

Shimizu, H., **Glaciological aspects and mass budget of the ice sheet in Mizuho Plateau,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Jan. 1978 No.7, p.264-274, 18 refs.

Distributions of the glaciological and the meteorological aspects in Mizuho Plateau were plotted against the surface elevation of the ice sheet. Three boundaries common to most of the aspects were found at the elevations of 400-500 m (firn line), 700-1000 m (dry snow line), 1700-2100 m and 3000-3200 m. Glaciological zonation of the ice sheet in Mizuho Plateau was suggested. An estimation was made on the mass budget of the ice sheet in the Shirase and Sôya drainage basins, Mizuho Plateau. Each mass budget appeared positive during the last several years. Approaches to determine the mass budget of the ice sheet were developed, and problems concerning its studies were pointed out. (Auth.)

F-19841

Panov, V.V., ed, Fedotov, V.I., ed, **East Antarctic pack ice** [Pripaĭ vostochnoĭ Antarktidy], *Sovetskaia antarkticheskaia Ekspeditsiia. Trudy,* 1977 Vol.63, 129p., In Russian. 262 refs.

Based on investigations by the SAE, a comprehensive characterization of East Antarctic pack ice is presented and features of formation and distribution of fast ice in Antarctica related to various factors. Crystal structure, physical and mechanical properties, spring-summer breakup and snow-ice layer thickness in the pack are discussed. Practical recommendations on summer over-ice transport operations are offered as a result of studies on ice structure and density. Data are presented in maps, tables and graphs.

F-19861

Campbell, W.J., Ramseier, R.O., Weeks, W.F., Gloersen, P., **Integrated approach to the remote sensing of floating ice,** MP 1069, International Astronautical Congress, 26th, Lisbon, September 21-27, 1975. Proceedings. Edited by L.G. Napolitano, Oxford, Pergamon Press, 1977, p.445-487, Refs. p.483-487.

DLC TL787.I44 1975

The current increase of scientific interest in all forms of floating ice—sea ice, lake ice, river ice, ice shelves and icebergs—has occurred during a time of rapid evolution of both remote-sensing platforms and sensors. The application of these new research tools to ice studies in the Arctic and Antarctic has generally been both piecemeal and sporadic, partly because the community of ice scientists has not kept up with the rapid advances in remote sensing technology and partly because they have not made their needs known to the space community. This paper seeks to help remedy the latter shortcoming. The remote sensing requirements for floating ice studies are given, and the capabilities of various existing and future sensors and sensor combinations in meeting these requirements are discussed. The desirable future sensors are also discussed from both the research and operational points of view.

F-19863

John, B.S., **Ice age, past and present,** London, William Collins Sons, 1977, 254p., Refs. p.237-240.

DLC QE697.J52

This comprehensive book on glaciers, ice and cold climate effects on the earth, its animals, plants and peoples is written for the general reader. The author, always injecting the fascination he has for his subject, explains the factors influencing glacier formation and destruction, the way they flow and change the face of the land, the effect of their meltwater on hydrology and geomorphology, and the features around the world attributable to the glaciated periods. The problem of ice ages is then discussed—their probable causes, the role of continental drift, eustasy and isostasy, changes in flora and fauna, and the impact of the ice ages on evolving man. The Little Ice Age from the 17th to the 19th centuries is described.

F-19878

Mercer, J.H., **West Antarctic ice sheet and CO2 greenhouse effect: a threat of disaster,** *Nature*, Jan. 26, 1978 271(5643), p.321-325, 55 refs.

If the global consumption of fossil fuels continues to grow at its present rate, atmospheric CO2 content is expected to double in about 50 years. Climatic models suggest that the resultant greenhouse-warming effect will be greatly magnified in high latitudes. The computed temperature rise at 80S could start rapid deglaciation of West Antarctica, leading to a 5 m rise in sea level.

F-19880

Kato, K., **Factors controlling oxygen isotopic composition of fallen snow in Antarctica,** *Nature*. Mar. 2, 1978 272(5648), p.46-48, 10 refs.

Transportation of water vapor to the Antarctic ice sheet is one of the most important factors controlling oxygen isotopic composition of Antarctic snow, firn and ice. In previous studies the isotopic composition of precipitation was related only to its temperature of formation. In the study reported here, the relationship between the oxygen isotopic composition of fallen snow at the Showa Station and the transportation process of water vapor to the Antarctic ice sheet has been investigated. It was found that the oxygen isotopic composition of fallen snow is largely controlled by the supply of O-18-rich water vapor resulting from the approach of a cyclone, and is strongly related to the distance from the open sea to the sampling station.

F-19884

Vartykian, V.G., Kovalenko, V.I., Moiseev, B.I., **Artificial borehole deflection in Antarctica** [Opyt iskrivleniia skvazhin v usloviiakh Antarktidy], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten'*, 1977 No.96, p.24-25, In Russian.

A method is described whereby a borehole can be deflected in case of emergency or need to change the angle of the drilling operation. The technique has been successfully employed by the 16th-19th SAE's near Vostok Station.

F-19905

Shumskiĭ, P.A., **Dynamic glaciology,** New Delhi, Amerind Publishing Co., 1978, 161 p., TT76-52019, For Russian original see 24-2207. Refs. p.149-161.

This book presents for the first time the basic elements of dynamic glaciology: the science of glaciers as macroscopic physical systems. A closed system of equations is formulated with supplementary conditions which determine the state of processes in glaciers. Results of research on the physical properties of ice which enter into the equations are presented. The problems of dynamic glaciology are formulated and current solutions of stationary and kinematic problems are examined. The book represents an essential text for glaciologists. Particular reference is made to antarctic ice studies in the chapters on *Physical properties of ice* and *Kinematic solutions*. In the latter chapter the use of the axisymmetrical model to derive the average characteristic of the continental ice sheet of Antarctica is examined.

F-19915

Parker, B.C., Heiskell, L.E., Thompson, W.J., Zeller, E.J., **Non-biogenic fixed nitrogen in Antarctica and some ecological implications,** *Nature*, Feb. 16, 1978 271(5646), p.651-652, 17 refs.

Using data from analyses of South Pole ice, it is estimated that the mean annual accumulation of fixed nitrogen in the antarctic ice sheet is 27,300 tons of nitrate (as N) and 18,000 tons of ammonium (as N). If annual snow accumulation approximates annual losses through calving of icebergs, blowing snow and melting of the bottom of ice shelves, then antarctic ocean surface waters will be enriched by 46,100 tons of NO3-N + NH4-N during the austral summer. This contribution of fixed N to circumpolar surface waters may significantly influence productivity. The data largely reflect inputs from atmospheric sources.

F-19921

Yoshida, Y., Mae, S., **Some information on topographic features and the characteristics of the ice sheet around the Yamato Mountains,** *Tokyo. National Institute of Polar Research. Memoirs*, Feb. 1978 Special issue No.8, p.93-100, 12 refs.

Some information and suggestions for future field and theoretical works for meteorite search and glaciology in the Yamato Mountains region are presented, based on the preliminary mapping of surface features of the ice sheet by interpretation of aerial photographs and compilation of previous works. A considerably large extent of bare ice areas may be concerned with both regional and local topographies of the ice sheet. Several minor features are distinguished, mapped and described in connection with the movement of ice. The slope of marginal part of the ice sheet at its maximum stage is inferred from glacial topographies of the Yamato Mountains and coastal ice-free areas and from the continental shelf. The results are not conclusive but to be tested by future works. This, in its turn, may be useful as a kind of framework for future field works. (Auth.)

F-19946

U.S. Naval Oceanographic Office, **Report of the Antarctic Ice Observing and Forecasting Program—1964,** Washington, D.C., Mar. Sci. Dept., Oceanographic Prediction Division, Forecasting Branch, May 1966, 33p. SP-80(64).

This report summarizes NAVOCEANO Antarctic ice observations and forecasts made between October 1964 and January 1965. Operational aspects of obtaining and disseminating ice information and the ice forecasting and observing program are discussed. Ice charts depict observed synoptic ice conditions in the Ross Sea. Locations of oceanographic stations occupied in the Ross Sea are included. (Auth.)

F-19947

U.S. Naval Oceanographic Office, **Report of the Antarctic Ice Observing and Forecasting Program—1965,** Washington, D.C., Mar. Sci. Dept., Oceanographic Prediction Division, Forecasting Branch, Jan. 1967, 26p. SP-80(65).

This report summarizes NAVOCEANO Antarctic ice observations and forecasts made from October through December 1965. Operational aspects of obtaining and disseminating ice information and the ice forecasting and observing program are discussed. Ice charts depict observed synoptic ice conditions in the Ross Sea and McMurdo Sound. Locations of oceanographic stations occupied in this area are included. (Auth.)

F-19948

U.S. Naval Oceanographic Office, **Report of the Antarctic Ice Observing and Forecasting Program—1966,** Washington, D.C., Mar. Sci. Dept., Oceanographic Prediction Division, Forecasting Branch, July 1967, 28p. SP-80(66).

The ice program conducted by the Naval Oceanographic Office principally in support of DEEP FREEZE 67 antarctic operations is presented in this report. Methods of data collection and dissemination, ice forecasting, and various allied ice projects are discussed. A summary of ice conditions in the Ross Sea and McMurdo Sound is given graphically for the period October 1966 through January 1967. Ice concentrations were lighter than those experienced during DEEP FREEZE 65 conditions. Rapid disintegration during late November and early December resulted in open water to ice-free conditions in major shipping lanes. (Auth.)

F-19973

Gordienko, F.G., Kotliakov, V.M., **Influence of climatic and glaciological factors on paleotemperature of continental ice sheets** [O sootnoshenii klimaticheskogo i gliatsiologicheskogo faktorov formirovaniia paleotemperatur materikovykh lednikov], Problemy paleogidrologii, Moscow, Nauka, 1976, p.282-288, 16 refs.

DLC QE501.4.P3P75

Oxygen isotope analysis of ice cores from deep crevasses at Camp Century in Greenland and at Byrd and Vostok Stations in Antarctica is discussed. The synchronicity of Holocene climatic warming at both poles is established and conclusions are drawn about the extent of Greenland and Antarctic ice sheets in the upper Pleistocene.

F-19991

Barthelemy, J.L., **Nansen Drift Station Project—remote sea-ice runway construction,** *U.S. Naval construction Battalion Center, Port Hueneme, Calif. Civil Engineering Laboratory. Technical note,* Apr. 1978 R-865, 46p., 14 refs.

In the past, surface-flooding activities have been confined to areas near major military logistic centers. As a result, techniques developed for sea-ice runway construction relied extensively upon the use of heavy equipment to clear snow and position large stationary pumping equipment. A field-test program conducted by the Civil Engineering Laboratory at Barrow, Alaska, during March, 1977, added a new dimension to surface-flooding technology. The exercises demonstrated the feasibility and capability of using small, lightweight pumps to prepare sections of a sea-ice runway. The water-handling equipment included two modified, highly portable, centrifugally driven trash pumps that had undergone preliminary low-temperature testing in the cold-chamber facilities at CEL. The use of the surface-flooding technique at Winter Quarters Bay, Antarctica, to construct an ice-wharf to aid ship-cargo operations is detailed.

F-20033

Lewis, E.L., Milne, A.R., **Underwater sea ice formations,** Polar oceans. Proceedings of the Polar Oceans Conference, Montreal, May 1974. Edited by M.J. Dunbar, Montreal, Arctic Institute of North America, 1977, p.239-245, 8 refs. Includes discussion.

A description of some unusual ice formations which occur naturally beneath an Arctic sea ice cover is given and related to similar observations made in the Antarctic seas. A qualitative explanation of their occurrence is proposed and possible connection made between these formations and biological productivity at the ice/water interface. (Auth.)

F-20045

Cragin, J.H., Herron, M.M., Langway, C.C., Jr., Klouda, G.A., **Interhemispheric comparison of changes in the composition of atmospheric precipitation during the Late Cenozoic era,** MP 1079, Polar oceans. Proceedings of the Polar Oceans Conference, Montreal, May 1974. Edited by M.J. Dunbar, Montreal, Arctic Institute of North America, 1977, p.617-631, 26 refs. Includes discussion.

Concentrations of alkali and alkaline earth elements in north Greenland glacial ice deposited during the past 100,000 years show marked variations over that time span. Prior to the Wisconsin Stage concentrations of Na, K, Mg and Ca average 26, 4.4, 6.3, and 18 microg/l respectively. Concentration levels rise gradually at the beginning of the Wisconsin Stage and peak at averages of 51, 29, 25, and 162 microg/l during the last third. During the Holocene the concentration levels decrease to lows of 17, 3.3, 2.6, and 5.1 microg/l. Silicon concentrations increase by about a factor of 3 (over Sangamon levels of 100 microg/l) during the late Wisconsin Stage, indicating a significant influx of eolian dust at that time. Although sulfate concentrations are high (280 microg/l) during the last third of the Wisconsin Stage, they remain relatively constant (100 microg/l) prior to and after that time: this might suggest that the Wisconsin Stage was not triggered by volcanism. Similar elemental concentrations measured in West Antarctic glacial ice deposited essentially over the same time period as the Greenland material also increase during the late Wisconsin Stage, but to a much smaller extent than those in Greenland ice. (Auth.)

F-20046

Orheim, O., **Global glacier mass balance variations during the past 300 years,** Polar oceans. Proceedings of the Polar Oceans Conference, Montreal, May 1974. Edited by M.J. Dunbar, Montreal, Arctic Institute of North America, 1977, p.667-681, 9 refs. Includes discussion.

Records of recent annual mass balance variations of glaciers and ice sheets are available from both the northern and southern hemispheres. The data are of varying quality, with the best and longest records available covering 300 years. The most precise of these records show that short-term (approx 10 years) variations in mass balance between the two hemispheres are anticorrelated. This anticorrelation applies particularly to glaciers situated adjacent to the far southwestern and far northeastern part of the Atlantic Ocean. Longer-term variations in mass balance appear to be in phase in the two hemispheres. (Auth.)

F-20047

Wakatsuchi, M., **On sea ice near Showa Station, Antarctica,** *Low temperature science (Teion kagaku). Series A Physical sciences,* 1977 Vol.35, p.281-286, In Japanese with English summary. 4 refs.

Observations on the physical properties of sea ice were made at Showa Station in Antarctica from January, 1976, to January, 1977, during the 17th Japanese Antarctic Research Expedition. The one-year ice was about 1 m thick at the beginning of the observation period and increased to 2 m subsequently. At the test site, about 1 km from the shore, sea ice was very flat and looked like a blue ice. There was no accumulated snow on top of it during observation periods. Holes of 30 cm in diameter were made by using a core drill. The thickness of ice, I, and the height above sea level, d, were measured. Since it is reasonable to assume that the ice sheet is in an isostatic condition, the density of ice was calculated from observed values of temperature and salinity of sea water. The results are summarized as follows. (1) I increased from 1 to 2 m in proportion to the square root of the accumulated degree-days of frost. (2) The ratio $d/I=0.1$. (3) The average density was estimated as 0.921. (4) The average salinity had little correlation to I, being approximately constant. (Auth. mod.)

F-20051
Kikuchi, K., **Snow crystals at the South Pole** [Nankyoku ni furu yuki no monogatari], *Polar news (Kyokuchi)*, July 1975 No.21, p.31-38, In Japanese.

The objective of this study was to observe the crystal structure of clear sky precipitation occurring when snow clouds are absent, and a 22 or 46 degree halo appears. This precipitation consists of ice crystals resembling fine silvery threads. When examined, the crystals are either solid square columnar or square plate. Many of the crystals are in fact multiple configurations, built up bullet-shaped crystals or of variations on the bullet-shape. Twenty microphotographic plates are provided illustrating the various forms.

F-20052
Bardin, V.I., Suetova, I.A., **Glacial mass balance of Antarctica** [Biudzhet oledeneniia Antarktidy], Vsesoiuznyĭ gliatsiologicheskiĭ simpozium, 3-e. Tezisy dokladov (All-union Glaciological Symposium, 3rd. Summaries of the papers), Frunze, Akademiia nauk Kirgizskoĭ SSR, 1965, p.8-9, In Russian.

DLC QE575.V8

An attempt is made to estimate the mass balance of Antarctic ice by determining the contribution made by various types of shoreline—glacier outlets, shelf ice, continental barrier ice, and dry cliffs. Volume of ice loss in the form of icebergs, of melting shelf ice, and melting of land ice is considered. Estimated mass balance is 970 cu km gain per year.

F-20055
Gjessing, Y.T., Gjessing, E.T., **Chemical composition of an antarctic snow profile,** *Vatten,* 1973 29(3), p.233-237, 11 refs.

During 1970-71 snow samples were collected each 30 cm from a 10 m profile in the Antarctic. The 10 m snow layer is estimated to be 25 years old. By comparing the mean concentration of the different components analyzed in the upper 5 meters with that of the lower, it was found that, except for sulphate and a few other elements, there was a significant concentration increase with depth. It is suggested that this phenomenon might be explained by the snow profile acting as a filter for the aerosols. The results showed, on the other hand, a concentration decrease of sulphate with depth, which suggests that the content of sulphur brought into the atmosphere by man has increased in Antarctica during the last decades. (Auth.)

F-20057
Budd, W.F., Australian National Commission for UNESCO, **Antarctic mass balance studies,** Progress in Australian hydrology, Canberra, Australian Government Publishing Service, 1974, p.88-95, 25 refs.

DLC GB658.8.A8A97

This article describes the Australian contribution to the International Hydrological Decade, especially to study of large-scale flow of the Antarctic ice sheet, the Law Dome Project and the Lambert-Amery Basin Project. Charts showing flowlines and balance velocities for the antarctic continent, a diagram showing ice movement vectors for Amery Ice Shelf, and a chart of measured mean annual accumulation rate over Law Dome are presented.

F-20067
Kovacs, A., **Axial double point-load tests on snow and ice,** *U.S. Army Cold Regions Research and Engineering Laboratory,* CR 78-01, Mar. 1978, 11p., ADA-053 321, 11 refs.

The results of axial double point-load tests on disk samples of snow and ice obtained from the area of McMurdo Sound, Antarctica, are presented. They show the effects of temperature, sample length, load point diameter and specific gravity on failure load. It was determined that 13 samples should be tested to obtain a representative mean strength index. The results show that the axial double point-load test has good possibilities as a rapid field test for determining the unconfined compressive strength of snow and ice but that further evaluation of the variables affecting test results must be made. (Auth.)

F-20068
Weeks, W.F., Mellor, M., **Some elements of iceberg technology,** *U.S. Army Cold Regions Research and Engineering Laboratpry,* CR 78-02, Mar. 1978, 31p., ADA-053 431, 52 refs.

Many of the technical questions relating to iceberg transport are given brief, but quantitative, consideration. These include iceberg genesis and properties, the mechanical stability of icebergs at sea, towing forces and tug characteristics, drag coefficients, ablation rates, and handling and processing the iceberg at both the pick-up site and at the final destination. In particular, the paper attempts to make technical information on glaciological and ice engineering aspects of the problem more readily available to the interested planner or engineer. Specific conclusions include: 1) No unprotected iceberg, no matter how long or wide, would be likely to survive the ablation caused by a long trip to low latitudes. 2) Icebergs that have a horizontal dimension exceeding 2 km may well be prone to breakup by long wavelength swells. 3) To avoid the dangers associated with an iceberg capsizing, the width of a 200-m-thick iceberg should always be more than 300 m. 4) For towing efficiency the length/width ratio of a towed iceberg should be appreciably greater than unity. 5) For a pilot project, the selected iceberg would have to be quite small, if for no other reason than the practical availability of tug power. (Auth.)

F-20077
Nishio, F., **Glaciological survey in 1976-1977,** *Japanese Antarctic Research Expedition. JARE data reports,* Mar. 1978 No.44, 123p.

This volume presents data obtained by the oversnow traverse party from Showa Station to Mizuho Camp and the glaciological survey at Mizuho Camp. Tables cover the following topics: net accumulation of snow by stake measurements at Mizuho Camp and on the traverse route: snow temperatures at Mizuho; thermal cracks at Mizuho; surface meteorological data on the traverse; and surface snow density.

F-20083
Kobayashi, S., **Observation of the atmospheric surface layer on bare ice on the circumference of the Yamato Mountains, Antarctica,** *Antarctic record,* Mar. 1978 No.61, p.11-22, In Japanese with English summary. 21 refs.

Measurements of wind speed and air temperature profiles in the atmospheric surface layer above bare ice surface in the Yamato Mountains were carried out under neutral and unstable conditions in December, 1973. The value of aerodynamic roughness parameter was constantly 0.085 cm, independent of wind speed, and this value corresponded to the depth of spoon-cut features (2-3cm) on the bare ice surface. Friction velocity was 0.0057 of wind speed at 1 m height. The atmosphere showed an unstable condition (negative Richardson number) with the decrease of wind speed, as the bare ice surface was heated by radiation. Eddy diffusivity obtained on the bare ice surface in neutral condition was larger than that of sea ice around Showa Station. (Auth.)

F-20095

Kawamura, A., Furuno, T., **On the northern extreme of the pack-ice edge observed by whaling vessels in the summer of the antarctic seasons 1957/58-1962/63,** *Whales Research Institute. Scientific report.* Dec. 1977 No.29, p.137-141, 3 refs.

Data are reported on the movement of the northern extreme of the pack ice edge observed during summer whaling operations in the Antarctic Ocean from 1957 to 1962. The figures are based on day-by-day reports exchanged between whale catchers. Although the material provides little knowledge on the movement of pack ice in time and space, simultaneous observations of the northern extreme from different localities permit estimates of how fast the pack ice shifts back and forth as well as estimates of ice coverage relative to environmental conditions for marine life.

F-20107

International Symposium on Isotopes and Impurities in Snow and Ice, Grenoble, Aug. 28-30, 1975, **Proceedings,** International Association of Hydrological Sciences, 1977, 419p., For individual papers see 32-3803 through 32-3861 or F-20108 through F-20131.

The symposium convened to meet the specific need to extend understanding of the physical basis of climate and the record of climatic changes as evidenced in deposited snow and ice. Pollution of more recent times also shows in these deposits. The symposium papers address themselves to this broad general scheme through presentations of measurements and interpretations of isotopes and impurities in snow and ice before and after deposition. In more than 65 papers, some 160 participants deal with various aspects of these problems, reporting research results from both Arctic and Antarctic areas.

F-20108

Bentley, C.R., **Impurities and seismic wave attenuation in the West Antarctic ice sheet,** *International Association of Hydrological Sciences. Publication.* 1977 No.118, International Symposium on Isotopes and Impurities in Snow and Ice, Grenoble, Aug. 28-30, 1975, p.13-16, In English with French summary. 7 refs.

Seismic refraction measurements carried out near Byrd station, Antarctica, have led to a determination of seismic wave attenuation. The primary difficulty in interpreting field results is the extreme sensitivity of the observed attenuation to small variations in the seismic velocity. Detailed velocity analysis, based on multiple-surface-reflected arrivals, has made possible an estimate of the average internal friction for compressional waves between 100 and 500 m depth. The value compares favorably with laboratory measurements by Kuroiwa (1964) on polycrystalline ice with an ionic impurity concentration of 1.5-2 microeq/l, such as has been measured in the snow and ice near Byrd station. The work suggests the possibility of future determination of impurity concentrations in ice sheets at depths beyond the reach of most sampling programs. (Auth. mod.)

F-20109

Goodman, D.J., Frost, H.J., Ashby, M.F., **Effect of impurities on the creep of ice 1h and its illustration by the construction of deformation maps,** *International Association of Hydrological Sciences. Publication.* 1977 No.118, International Symposium on Isotopes and Impurities in Snow and Ice, Grenoble, Aug. 28-30, 1975, p.17-22, In English with French summary. 30 refs.

Equations exist which predict the strain rate of polycrystalline ice as a function of temperature and stress based on microscopic models for dislocation glide and for creep by boundary diffusion and bulk diffusion. These are used to plot on axes of homologous temperature and normalized stress, contours of constant strain rate for different impurity concentrations. The areas in which each mechanism dominates are shown on a diagram or deformation map. Practical examples are given to illustrate the use of the diagrams to identify the dominant mechanism of flow of natural ice. An estimate of the temperature-stress profile of the Byrd borehole is plotted on the map.

F-20110

Jones, S.J., Johari, G.P., **Effect of hydrostatic pressure on air bubbles in ice,** *International Association of Hydrological Sciences. Publication,* 1977 No.118, International Symposium on Isotopes and Impurities in Snow and Ice, Grenoble, Aug. 28-30, 1975, p.23-28, In English with French summary. 2 refs.

In order to understand the reason for the disappearance of air bubbles below 1100 m in the deep core obtained at Byrd station, the effect of hydrostatic pressure on air bubbles in ice is being studied. Samples of natural and artificial ice, approximately 10 mm cubes, are kept in a high pressure optical cell rated to 250 b: and pictures of the sample are taken regularly. From enlarged prints the size of the bubbles is determined as a function of time. Our main conclusion is that bubbles initially close up rapidly due to the deformation of ice around the bubble and then continue to close up slowly due to the diffusion of air molecules into the ice lattice. No significant difference is found between clathrate and nonclathrate formation conditions. (Auth.)

F-20111

Junge, C.E., **Processes responsible for the trace content in precipitation,** *International Association of Hydrological Sciences. Publication.* 1977 No.118, International Symposium on Isotopes and Impurities in Snow and Ice, Grenoble, Aug. 28-30, 1975, p.63-76, In English with French summary. 12 refs.

Measurements of trace substances in snow and ice from glaciers and particularly also from the big ice sheets in Greenland and Antarctica are increasingly used for conclusions with respect to atmospheric behavior and geochemical considerations. The incorporation of atmospheric trace substances into precipitation can occur within the cloud, below the cloud and at the earth's surface. These three processes are discussed with the emphasis on relating snow and ice concentrations with concentrations in air. (Auth. mod.)

F-20112

Picciotto, E.E., **On the origin of mineral impurities in ice** [Sur l'origine des impuretés minerales de la glace], *International Association of Hydrological Sciences. Publication.* 1977 No.118, International Symposium on Isotopes and Impurities in Snow and Ice, Grenoble, Aug. 28-30, 1975, p.78-87, In French with English summary. 6 refs.

Mineral impurities can originate from four main sources: the ocean, the lithosphere, extra-terrestrial space and man's activities. Whichever particular objectives are envisaged, besides the analytical problems, any research in this field faces a common general problem: determination of the relative contributions of each source. This paper discusses chemical and isotopic methods which will give a solution to this problem. The main difficulty lies in the large chemical fractionations which appear to take place at all stages of the passage between the source and the place of deposition. Two cases of definite identification of the origin are presented: evaluation of the extra-terrestrial component in firn samples from Plateau station (East Antarctica), thanks to the measurement of Mn-53, and the identification of a man-made component in the Pb found in an alpine glacier, based on the relative abundance of the stable isotopes of Pb (Auth.)

F-20113

Warburton, J.A., Linkletter, G.O., **Precipitation-forming mechanisms and the chemistry of precipitation on the Ross Ice Shelf, Antarctica,** *International Association of Hydrological Sciences. Publication,* 1977 No.118, International Symposium on Isotopes and Impurities in Snow and Ice, Grenoble, Aug. 28-30, 1975, p.88-94, In English with French summary. 11 refs.

The chemistry of snow collected on the Ross Ice Shelf shows significant departures from the inverse relationship of chemical concentration with accumulation at distances greater than 450 km from the edge of the ice shelf. A second component of chemical accumulation at these more inland sites, other than the oceanic aerosol, is suggested. This is supported by observations of Mg enrichment and higher K enrichment at the more inland sites. Coincident, significant changes by factors of up to 10:1 in the Na, Mg and K contents of near-surface snow with depth at two sites separated by 380 km, demonstrates the effects of large-scale phenomena over the ice shelf. A possible connection with sea-ice extent is suggested. Investigation of specific precipitation types (small droplet fog riming and diffusional ice crystal growth) shows that they are associated with higher enrichment factors for K than other forms of snowfall. There is some evidence that Mg also may be slightly enriched in these specific precipitation types. Hence, the precipitation forms are playing significant roles in the chemical composition; and these factors should be given due consideration in the interpretation of the chemical content of snow and ice. (Auth.)

F-20114

Peel, D.A., **Search for organochlorine residues in antarctic snow,** *International Association of Hydrological Sciences. Publication.* 1977 No.118, International Symposium on Isotopes and Impurities in Snow and Ice, Grenoble, Aug. 28-30, 1975, p.108-111, In English with French summary. 6 refs.

Methods have been devised for estimating DDT residues and polychlorobiphenyls (PCBs) in antarctic snow. Closed glass systems were used to melt samples, to extract residues by solvent partition or by absorption on to solid phase, and to concentrate and microderivatize the extracts. Individual components were identified by electron capture gas chromatography. The system which absorbs the residues on to small amounts of gas chromatography solid phase loaded with silicone oil can process 100-l aliquots of sample. More product is available for analysis than can be obtained by cyclic liquid extraction procedures; sources of contamination are reduced, and the method may be used in the field. Upper limits of concentration for DDT residues of 0.1-2.0 x 10 exp -12 g/g snow and for PCBs of 0.1 x 10 exp -12 g/g of snow have been established in samples taken from more than 350 km inland from Halley Bay station. (Auth.)

F-20115

Lorius, C., Merlivat, L., **Distribution of mean surface stable isotope values in East Antarctica: observed changes with depth in the coastal area,** *International Association of Hydrological Sciences. Publication,* 1977 No.118, International Symposium on Isotopes and Impurities in Snow and Ice, Grenoble, Aug. 28-30, 1975, p.127-137, In English with French summary. 23 refs.

Mean samples of the snow accumulated during the last 10 years have been collected at 48 stations distributed along a 850-km traverse in East Antarctica, from Dumont d'Urville station towards Vostok. Up to 1000 m a.s.l. the mean deuterium values remain constant; then they decrease with various parameters (distance, elevation) and in particular with mean annual temperature, according to a linear relationship. The observed relationship between deuterium and O-18 is discussed. Measurements along a 303-m deep core (down to the bedrock) obtained in the coastal area show very large deuterium changes, with mean values varying between -150 and -360 per mille; this last value characterizes present surface snow deposited about 800 km upstream. The observed deuterium variations may he explained by changes in the site of origin of the ice; mechanisms which could explain the presence of ice from far distant origins above layers from less distant origins are discussed. (Auth. mod.)

F-20116

Merlivat, L., Jouzel, J., Robert, J., Lorius, C., **Distribution of artificial tritium in firn samples from East Antarctica,** *International Association of Hydrological Sciences. Publication,* 1977 No.118, International Symposium on Isotopes and Impurities in Snow and Ice, Grenoble, Aug. 28-30, 1975, p.138-145, In English with French summary. 12 refs.

Five firn cores from East Antarctica were analyzed for artificial tritium distribution. A fallout tritium chronology in the Southern Hemisphere was established using data from precipitation at mid latitude, Kaitoke at 41S, and high latitude, Halley Bay at 75.5S, on the Antarctic continent. Mean annual accumulation rates lie between 300 and 76 mm water equivalent for stations located between 130 and 800 km from the coast. As previously established for firn samples in Greenland, a correlation was found between the mean artificial tritium concentration in snow and the altitude of the site of precipitation. (Auth.)

F-20117

Lambert, G., Ardouin, B., Sanak, J., Lorius, C., Pourchet, M., **Accumulation of snow and radioactive debris in Antarctica: a possible refined radiochronology beyond reference levels,** *International Association of Hydrological Sciences. Publication.* 1977 No.118, International Symposium on Isotopes and Impurities in Snow and Ice, Grenoble, Aug. 28-30, 1975, p.146-158, In English with French summary. 16 refs.

Airborne and deposited fission products were compared in Terre Adélie. Aerosols have been collected daily since 1959 at Dumont d'Urville station, and their gross beta-activity was measured in 1974. At the same time and using the same technique the beta-activity was measured on samples cut from a firn core at D45 station, 80 km away. Both the very good observed agreement and the visible lack of any ablation made it possible to date the layers with an accuracy better than 6 months. Therefore, this D45 core may be considered as a 'reference core' for the chronology of the artificial radioactive deposition in a large part of Antarctica. Thus a precise comparison with this core may be used instead of the system of 'reference levels' which has been used up till now. Similar results were obtained at South Pole station. Samples from cores collected by the two IAGP expeditions of 1971-1972 and 1972-1973 along a traverse from Dumont d'Urville going 800 km inland in a south-southwest direction were studied, and a new estimation of the accumulation rates is given. (Auth.)

F-20118

Boutron, C., Lorius, C., **Trace element content in East Antarctica snow samples,** *International Association of Hydrological Sciences. Publication,* 1977 No.118, International Symposium on Isotopes and Impurities in Snow and Ice, Grenoble, Aug. 28-30, 1975, p.164-171, In English with French summary. 18 refs.

Analyses are reported for Na, Mg, K, Ca, Mn, Fe and Al in various surface firn samples collected along a 1100-km track on the Dumont d'Urville-Vostok axis in East Antarctica. Stringent contamination-free techniques were used both for sampling and analyses. Measured concentrations are among the lowest ever obtained in Antarctica. Na, Mg and to a less extent K and Ca are shown to decrease

as the distance from the coast increases, while Mn, Fe and Al are almost constant. Beyond 450 km, after Al correction for the continental contribution, K and Mg are shown to be enriched with respect to Na in comparison to bulk sea water; Mn and Fe show no enrichment with respect to Al by referring to the mean crustal composition. Between the coast and 450 km the high enrichment factors measured for K, Mn and Fe suggest the contribution of another source which could be volcanic. In the inland areas of East Antarctica, the marine contribution (from 1 to 10 kg/sq km/yr) is shown to account for about 65% of the total (more than 90% at New Byrd Station, West Antarctica); the coastal areas (up to 75 km from the sea) receive 130 kg/sq km/yr, a major part of the total marine contribution. (Auth.)

F-20119

Clausen, H.B., Dansgaard, W., **Less surface accumulation on the Ross Ice Shelf than hitherto assumed,** *International Association of Hydrological Sciences. Publication,* 1977 No.118, International Symposium on Isotopes and Impurities in Snow and Ice, Grenoble, Aug. 28-30, 1975, p.172-176, In English with French summary. 7 refs.

Total beta-activity profiles along 36 hand-augured firn cores from the southeastern part of the Ross Ice Shelf indicate accumulation rates of only half the previous estimates determined from stratigraphic pit studies. (Auth.)

F-20120

Gjessing, Y.T., **Filtering effect of snow,** *International Association of Hydrological Sciences. Publication,* 1977 No.118, International Symposium on Isotopes and Impurities in Snow and Ice, Grenoble, Aug. 28-30, 1975, p.199-203, In English with French summary. 3 refs.

Chemical analyses of snow samples from a 10-m snow profile in Queen Maud Land, 1200 m a.s.l., indicate an increase with depth for 14 of the 17 elements. This is explained by the snow acting as a mechanical filter for the particulate content of the air. Due to strong winds the air volume in the snow (30-50 per cent) will constantly be replaced. To test this hypothesis a snow layer was ventilated artificially. This demonstrated that a 1-m snow layer was not a totally effective filter for aerosols. (Auth.)

F-20121

Dansgaard, W., Barkov, N.I., Splettstoesser, J., **Stable isotope variations in snow and ice at Vostok, Antarctica,** *International Association of Hydrological Sciences. Publication,* 1977 No.118, International Symposium on Isotopes and Impurities in Snow and Ice, Grenoble, Aug. 28-30, 1975, p.204-209, In English with French summary. 6 refs.

Detailed sampling from surface snow and deep ice at Vostok shows obliteration in the firn of all delta (O-18) cycles shorter than 20 cm of ice equivalent. The mean delta (O-18) to estimated age relationship confirms previous findings, but the climatic implications remain unclarified till a continuous delta (O-18)-profile is established. (Auth.)

F-20122

Johnsen, S.J., **Stable isotope homogenization of polar firn and ice,** *International Association of Hydrological Sciences. Publication,* 1977 No.118, International Symposium on Isotopes and Impurities in Snow and Ice, Grenoble, Aug. 28-30, 1975, p.210-219, In English with French summary. 12 refs.

Delta (O-18)-cycles with wavelengths shorter than 20 cm of ice are obliterated during firnification. This corresponds to a diffusion length of 7-8 cm of ice, independent of accumulation rate and temperature, according to a model presented. Another combined ice flow-diffusion model describes the observed smoothing of delta (O-18)-gradients at great depths. Based on digital deconvolution techniques, a method is described that allows re-establishing apparently lost delta (O-18)-cycles. This may considerably extend the range of ice core dating by annual delta (O-18)-cycles. Antarctic and Greenland data are plotted.

F-20123

Oeschger, H., Stauffer, B., Bucher, P., Loosli, H.H., **Extraction of gases and dissolved and particulate matter from ice in deep boreholes,** *International Association of Hydrological Sciences. Publication,* 1977 No.118, International Symposium on Isotopes and Impurities in Snow and Ice, Grenoble, Aug. 28-30, 1975, p.307-311, In English with French summary. 5 refs.

An extraction probe has been developed which allows vacuum melting of several tons of ice in boreholes down to a depth of 400 m. It mainly consists of an electrical heater and a rubber packer to isolate the section of the borehole in which the extraction takes place. During melting the evolving gases are pumped and collected continuously. The meltwater can be circulated through ion exchange resins or a filter, for collection of dissolved and particulate matter. From the gas samples CO2 is extracted for C-14 dating, Ar for Ar-39 dating. From the meltwater the Si-32 activity is measured. Pollen and cosmic dust studies can be performed on filter samples. The technique has been used on samples from Byrd Station, Dye 3 (south Greenland), and from Devon I. (Canada).

F-20124

Budd, W.F., Morgan, V.I., **Isotopes, climate and ice sheet dynamics from core studies on Law Dome, Antarctica,** *International Association of Hydrological Sciences. Publication,* 1977 No.118, International Symposium on Isotopes and Impurities in Snow and Ice, Grenoble, Aug. 28-30, 1975, p.312-321, In English with French summary. 6 refs.

Oxygen isotope studies have been carried out on surface samples and seven cores ranging in depth from 70 to 380 m from Law Dome at various elevations from 160 to 1390 m. Detailed studies of 15 years' accumulation have been made to compare the isotope variations with the climatic record at Wilkes-Casey over the same period. Although strongly influenced by sastrugi and dunes, the records do show some correlation with annual mean temperatures. Two cores, 12 km apart, covering the most recent decades and centuries, show considerable similarity in fluctuations which are considered primarily climatic. Two deep cores, reaching close to bedrock near the coast, show little change from steady state since about 8000 years ago. Prior to that the ice was of much colder origin. Gas content analyses of the cores suggest the surface elevation was also considerably greater for that time period. An estimation is made of the extent of the ice during the maximum ice age period. (Auth.)

F-20125

Dansgaard, W., Johnsen, S.J., Clausen, H.B., Hammer, C.U., Langway, C.C., Jr., **Stable isotope profile through the Ross Ice Shelf at Little America V, Antarctica,** *International Association of Hydrological Sciences. Publication,* MP 1095, 1977 No.118, International Symposium on Isotopes and Impurities in Snow and Ice, Grenoble, Aug. 28-30, 1975, p.322-325, In English with French summary. 9 refs.

The delta (O-18)-profile along the Little America V ice core ranges from -20 per mille near the surface to -35 per mille at the bottom, i.e., lower than at any surface value hitherto measured in West Antarctica. (Auth.)

F-20126
Raynaud, D., Lorius, C., **Total gas content in polar ice: rheological and climatic implications,** *International Association of Hydrological Sciences. Publication,* 1977 No.118, International Symposium on Isotopes and Impurities in Snow and Ice, Grenoble, Aug. 28-30, 1975, p.326-335, In English with French summary. 15 refs.

The present variations of the total gas content V measured on ice samples from Byrd station (Antarctica), Camp Century (Greenland) and Devon Island lead to a mean close-off density independent of the site, which permits, in the case of locations with similar climatic conditions, the use of V as an indicator of the elevation of the ice formation site with an accuracy of a few hundred meters. The validity of the method based on either a constant density or void volume or porosity at close-off remains to be checked for locations showing very different climatic conditions. However, the V-variations observed on the ice core of D10 (coastal area of Adelie Land, Antarctica) suggest this validity, since the elevation changes of the formation site obtained from V data for a wide range of climatic conditions are in good agreement with those obtained from isotopic variations. The climatic contribution to the isotopic variation between the late Wisconsin and Holocene is comparable for Greenland and Antarctica. (Auth. mod.)

F-20127
Hughes, T.J., **Do oxygen isotope data from deep coreholes reveal dike-sill thermal convection in polar ice sheets,** *International Association of Hydrological Sciences. Publication,* 1977 No.118, International Symposium on Isotopes and Impurities in Snow and Ice, Grenoble, Aug. 28-30, 1975, p.336-340, In English with French summary. 10 refs.

Oxygen isotope profiles down the Camp Century, Greenland, and Byrd station coreholes have more 'cold spikes' than can be explained by known climatic cooling events. These cold spikes can be explained by a dike-sill convection mechanism, in which basal ice having cold delta (O-18)-values is transported up dikes and redistributed as sills interbedded in the cold sinking ice having warmer delta (O-18)-values. Camp Century cold spikes are sharper and more concentrated toward the bed than those at Byrd station because ice sheet spreading has carried the Camp Century ice to lower elevations where it is too thin for dike-sill convection to occur. (Auth.)

F-20128
Thompson, L.G., **Variations in microparticle concentration, size distribution and elemental composition found in Camp Century, Greenland, and Byrd station, Antarctica, deep ice cores,** *International Association of Hydrological Sciences. Publication,* 1977 No.118, International Symposium on Isotopes and Impurities in Snow and Ice, Grenoble, Aug. 28-30, 1975, p.351-364, In English with French summary. 20 refs.

Two initial studies of the microparticle variation in the Byrd station and the Camp Century deep ice cores have been conducted to clarify the relationship between atmospheric turbidity and climate. First, an excellent correlation has been established between the microparticle concentration and size distribution and the stable isotope values for representative sections from the same depths in both ice cores. Second, the results of this work have led to the proposal of annual microparticle variations as a means of dating ice sheets. Further development of this technique should allow dating of ice cores at those depths where stable isotope variations are obscured by diffusion. Third, a significant aspect of this study is the determination of the elemental composition of the microparticles and their variation between Wisconsin and Holocene ice. Comparisons of particle concentration, size distribution and elemental compositions are made between the Northern Hemisphere and the Southern Hemisphere ice cores. (Auth.)

F-20129
Raynaud, D., Delmas, R., **Composition of gas contained in polar ice** [Composition des gaz contenus dans la glace polaire], *International Association of Hydrological Sciences. Publication,* 1977 No.118, International Symposium on Isotopes and Impurities in Snow and Ice, Grenoble, Aug. 28-30, 1975, p.377-381, In French with English summary. 9 refs.

The gas content in Camp Century and Byrd Station ice samples was extracted and analyzed. The composition of the gas content is close to the present atmospheric composition except for CO2. Nevertheless, the O2-content of ice is systematically less than the atmospheric content whereas the Ar-content is higher. CO2-contents of a few tenths of per cent are obtained. Various processes which could explain the observed effects are discussed. (Auth.)

F-20130
Barkov, N.I., Korotkevich, E.S., Gordienko, F.G., Kotliakov, V.M., **Isotope analysis of ice cores from Vostok station (Antarctica), to the depth of 950 m,** *International Association of Hydrological Sciences. Publication,* 1977 No.118, International Symposium on Isotopes and Impurities in Snow and Ice, Grenoble, Aug. 28-30, 1975, p.382-387, In English with French summary. 10 ref.

Interpretation of the results of oxygen isotope analysis of ice cores obtained from the borehole at Vostok station is carried out. The borehole reached the depth of 950 m. To interpret the age of the samples the model of ice deformation with non-uniform strain rates by Nye was used. The series of samples represented 46,500 years. It is shown that the isotope profile of the Vostok borehole is mainly formed under the influence of a climatic agent and is not complicated by the proper effect of glacial cover. At the beginning of the Holocene, climatic warming occurred in Central Antarctica between 15,000 and 11,000 years ago; isotope shift made up 5 per mille, which is in keeping with a temperature increase of about 5C. Four cold periods are distinguished during the period between 46,500 and 1500 years ago. They are separated by three warmer periods. Mean delta (O-18) makes up -58.6 per mille in cold periods and -56.8 per mille in 'warm' periods. During the last 11,000 years mean delta (O-18) equals -53.8 per mille. The main result of the study is that for the last 50,000 years the basic temperature changes occurred synchronously in polar areas of both hemispheres. (Auth.)

F-20131
Oeschger, H., **Summary of work by the Physics Institute, Bern, on alpine and polar ice,** *International Association of Hydrological Sciences. Publication,* 1977 No.118, International Symposium on Isotopes and Impurities in Snow and Ice, Grenoble, Aug. 28-30, 1975, p.408-410, 5 refs.

The work of the Bern group includes studies on temperate (alpine) glaciers as well as on polar glaciers and ice sheets. The main emphasis is given to radioactive dating of firn and ice and to the study of the history of the cosmophysical and geophysical parameters recorded in ice. On the occasion of field projects in Greenland and Antarctica, a technique has been developed for *in situ* extraction of gases and dissolved and particulate matter from tons of ice in boreholes down to a depth of 400 m.

F-20157

Kravtsova, V.I., **Present possibilities of using space information for purposes of glaciology** [Sovremennye vozmozhnosti i ispol'zovanie kosmicheskoĭ informatsii v gliatsiologicheskikh tseliakh], *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭ. Khronika obsuzhdeniia*, 1977 Vol.31, p.183-192, In Russian. 93 refs.

Recent literature on studies of mountain glaciers, the Antarctic and Greenland ice sheet, snow cover, and sea ice is reviewed with emphasis on results obtained with LANDSAT spacecraft. In Antarctica, LANDSAT imagery is used mainly to produce photographic charts and to correct earlier maps. Several changes in ice position determined by satellite are noted.

F-20158

Mellor, M., **Obtaining fresh water from icebergs** [Poluchenie presnoĭ vody iz aĭsbergov], *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭ. Khronika obsuzhdeniia*, MP 1117, 1977 Vol.31, p.193, In Russian.

Conclusions of two conferences on the towing and utilization of icebergs, one held in Paris in June, 1977, the other at the University of Iowa in Oct., 1977, are reviewed. There is keen interest in water supply from icebergs, but technical problems remain. Rough estimates indicate that obtaining water from icebergs may be economically useful for rich countries with a fresh-water shortage.

F-20171

Kotliakov, V.M., Lapina, I.IA., **Soviet glaciological studies in 1976** [Sovetskie gliatsiologicheskie issledovaniia v 1976 godu], *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭ. Khronika obsuzhdeniia*, 1977 Vol.30, p.5-13, In Russian.

This review of glaciological investigations, performed by three principal Soviet institutions in 1976, includes the studies of Leningrad Arctic and Antarctic Institute on atmospheric interaction with underlying surfaces on the Antarctic Plateau and calculations of heat balance components of the surfaces. New, more accurate data were obtained on the morphometric characteristics of Antarctica for the new edition of the 1:3 000 000 scale map, the continental area, the basic glacier types and the shore line length. The Institute of Geography of the Academy of Sciences of the USSR reports the following: completions of oxygen-isotope analyses of ice cores from two Vostok Station wells to the depth of 950 m; strong variations in the Pleistocene ice cover of Western Antarctica suggested by geological and geomorphologic information; programming of calculations of basic parameters of ice sheets for the BESM-6 computer, and calculations of temperature fields along several survey routes for the space model of a glacier. The Moscow State University studied a group of different type glaciers in the Dry Valleys area, compiled charts of ice thickness and contour variations, and glacier movement velocities. Studies of paleoglaciological data suggested warming and increased humidity of the antarctic climate in late Pliocene. Additional achievements not covered by the regional review of glaciological studies in 1976 are enumerated.

F-20172

Diurgerov, M.B., Korolev, P.A., **Glaciological studies on the IAGP program in a new area of Eastern Antarctica** [Gliatsiologicheskie issledovaniia po programme MAGP v novom raĭone Vostochnoĭ Antarktidy], *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭ. Khronika obsuzhdeniia*, 1977 Vol.30, p.43, In Russian.

A glaciological survey was carried out in Feb.-Mar., 1977, in an unexplored area east of Pionerskaya Station. The 670 km long route extended in the C-dome direction from the Station to the point 73S-111E, in the Antarctic Slope zone, the altitude varying from 2750 to 3000 m. Along the route 335 snow stakes were placed 2 km apart. At each point the length of the stake above the snow surface and snow cover hardness were measured. Snow samples were taken from the surface every 26 km of the way for oxygen-isotope analyses. Snow survey polygons with holes 320, 350 and 575 cm deep located at their centers were established at the 120th, 320th and 670th km. Snow temperature, density, hardness and stratification were studied in the holes and snow samples collected. Dimensions and forms of surface microrelief were studied along the whole route. Barometric leveling, gravity and magnetic measurements were made at the snow stakes and on polygons.

F-20173

Miagkov, S.M., **Margin of continuous glaciation of Western Antarctica in the Ross Sea during the last glaciation maximum** [Granitsa lednikovogo pokrova Zapadnoĭ Antarktidy v more Rossa v posledniĭ maksimum oledeneniia], *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭ. Khronika obsuzhdeniia*, 1977 Vol.30, p.69-77, In Russian with English summary. 31 refs.

Analyses of glaciological, geophysical and geomorphological data suggest a wider spread of the West Antarctic Ice Sheet 15,000-20,000 years B.P. This is explained by eustatic drop of sea-level, differences in climatic conditions, sea-bottom topography, and other factors. In Holocene the shrinkage of the ice sheet was slow, ending 2,000-6,000 years ago. The Pre-Holocene reconstructions of its borders by T. Hughes (1973) and G.H. Dentrop (1975) are discussed. It is concluded, from the available geophysical data, that the West Antarctic ice sheet did not expand beyond the present Ross Ice Shelf barrier. There are no indications of current rapid ice destruction which could lead to strong imminent deterioration of the Earth's climate.

F-20187

Mae, S., Naruse, R., **Possible causes of ice sheet thinning in the Mizuho Plateau,** *Nature*, May 25, 1978 273(5660), p.291-292, 9 refs.

The thinning rate of the ice sheet on the Mizuho Plateau has been determined to be approx 70 cm/r and probably started a few thousand years ago. The results of calculations, using an equation of mass continuity along the flow line, suggest that the thinning of the ice sheet may be predominantly caused by basal sliding.

F-20193

Bader, H., **Polar glaciology** [Glaciología polar], *Montevideo. Instituto Antártico Uruguayo. Publicación*, 1976 No.19, p.19-25, In Spanish. 15 refs.

Three practical applications of glaciology are stated, including the towing of icebergs to water-poor areas. The major problems still unsolved are discussed briefly and the most pressing research questions outlined. Recommendations for glaciological investigations to be undertaken in the near future are made.

F-20211

Shoji, H., Higashi, A., **X-ray diffraction topographic studies of Antarctic deep core ice,** *Japanese journal of applied physics*, June 1978 17(6), p.993-1001, 8 refs.

X-ray diffraction topographs of Antarctic deep core ice, obtained at Byrd Station, revealed mosaic structures in comparatively large single crystals near the bottom of a 2000m ice sheet. Strain fields around thin cleavage cracks produced on the relaxation process of the

ice exhibited characteristic "Butterfly-wing" contrasts on one topograph. Three types of characteristic contrasts are well interpreted as the orientation contrasts caused by inclined reflecting planes in the strain field of the crack of which the shape is modelled by a double cone. The angular areas on the cone in which the inclined reflecting planes satisfy the Bragg condition are calculated and illustrated in a figure with respect to both the base angle of the cone and the rotation angle of mosaic elements. The structures and density of dislocations in the strain field around cracks are discussed. (Auth. mod.)

F-20234

Lebedev, V.L., **Maximum size of a wind-generated lead during sea freezing,** *Geomagnetism and aeronomy,* May-June 1968 15(3), p.313-318, Translated from Geomagnetizm i aeronomiia. 10 refs.

Heat exchange between the atmosphere and the freezing sea in the wind generated open lead is described by equations, and the period of time necessary for the upper layer of water to transgress the lead is given. The experimental constants have been verified for White Sea fast ice by a Moscow State University expedition: the results are presented. Equations are also used for determining the lead width. The maximum possible width of a lead in the Davis Sea is calculated: it is found to be about 7 km at an air temperature of -16C and infinite wind velocity. (Auth.)

F-20238

Gudmandsen, P., **Microwave radiometry of ice and snow,** *Copenhagen. Polyteknisk laereanstalt. Laboratoriet for elektromagnetisk feltteori. Report,* Dec. 1975 No.152, 42p., 28 refs.

This report presents a review of the capabilities of microwave radiometry for measurement of ice and snow based essentially on airborne and satellite-borne data available in the literature. Also, an account is given on a number of models of the snow/ice measurement situation which have been developed in order to understand the measurement results. These attempts of solving the inverse problem in remote sensing are perhaps of equal importance as the development of sensors. Finally, considerations are given to future applications and systems of microwave radiometry. (Auth. mod.)

F-20247

Burrows, C.J., **Icebergs in the Southern Ocean,** *New Zealand geographer,* Oct. 1976 32(2), p.127-138, Refs. p.136-138.

The paper summarizes the records of icebergs sighting at latitudes lower than 60S. At intervals, exceptional irruptions of icebergs have occurred at latitudes which normally are ice-free. The most outstanding episodes since the late 18th century were in 1854-1860, 1891-1897 and 1904-1912. Other notable irruptions occurred in 1772-1775, in the 1830's and 40's, 1922-1924 and in the 1930's. Comparisons of the times of iceberg occurrences at relatively low latitudes in the Southern Hemisphere are made with glacial events and temperature variations in New Zealand and in the islands near the Antarctic Peninsula, and also with variations in the position of the Arctic paek ice near Iceland. Some coincidences of these and other phenomena are demonstrated. It is postulated that the iceberg irruptions are related to northward shifts of the westerly wind belts, surface current systems and possibly the Antarctic convergence. This must also influence the weather and climate patterns in mid Southern latitudes. (Auth.)

F-20260

Dalinger, R.E., **Antarctic ice and history of world climate** [El hielo antártico y la historia del clima mundial], *Antártida,* June 1975 No.6, p.39-42, In Spanish.

The Antarctic Peninsula Glaciological Program, a joint effort by the Soviet Union, the United Kingdom, Chile and Argentina, is expected to shed light on the problem of world climatic history. Isotope studies, determination of density, conductivity, microparticle concentration and other parameters will be carried out on ice and snow samples both from shallow (10-15 m) cores and deep (100 m) drill sites. 500-m soundings and aerial radioecho surveys will also be included in the extensive program planned to extend well into the 1980's.

F-20279

Robin, G. de Q., Drewry, D.J., Meldrum, D.T., **International studies of ice sheet and bedrock,** *Royal Society of London. Philosophical transactions,* May 26, 1977 279B(963), p.185-196, 36 refs.

The main Antarctic ice sheet is so vast that large-scale international programs are necessary for an adequate study of its dynamics, thermodynamics and past history. Radio echo sounding methods are providing reconnaissance mapping of the ice sheet on a continental scale. The soundings also yield significant information on the internal deformation of the ice sheet, on the flow of ice shelves and the nature of the bottom surface of the ice. This information is being used to amplify and extrapolate detailed results from other groups who are studying the mass balance, ice movement, and past history by deep drilling; it is also of value in isolating critical sites for future studies. Reconnaissance mapping has now shown the presence of sub-ice lakes larger than those reported in 1973. Studies of radio wave reflexions from internal layers which are believed to be former depositional surfaces, have shown that the conformity between these layers and the bedrock relief decreases as ice movement increases. Statistical analyses of bedrock relief and radio wave reflexion parameters are being used to delimit major geological provinces beneath the ice and investigate the structural and lithological transition between the Transantarctic Mountains and East Antarctica. Such studies have recently indicated the presence and structure of two large intracratonic sedimentary basins in eastern Antarctica. (Auth.)

F-20300

Frazier, K., **Is there an iceberg in your future,** *Sciences news,* Nov. 5, 1977 112(19), p.298-300.

The idea of towing antarctic icebergs to coastal deserts for water is undergoing a strong revival. A technical study prepared for Prince Faisal of Saudi Arabia and presented at a conference sponsored by him in Paris contends that iceberg water could be delivered "at the faucet" in Saudi Arabia at a cost of 50 cents per cu m compared with the present desalinated water cost of 80 cents. Some of the enormous technical problems associated with such a task are described: attaching multi-tug towlines, towing, insulating or encasing, cutting into smaller sections, and trapping meltwater. A pilot program of towing two small instrumented antarctic icebergs in tandem the 8,000 mi to southern California has been proposed to test alternative theories of insulation, harnessing and transport as applied to larger icebergs for future use.

F-20306

Schnell, R.C., **Naturally occurring biological ice nucleants: a review,** International Conference on Cloud Physics, Boulder, Colorado, July 26-30, 1976. Collection of preprints, Boston, Mass., American Meteorological Society, 1976, p.57-60.

The results of studies show that materials of biogenic origin may be among the more important ice nucleus sources in the Earth's atmosphere. The relatively high nucleus concentrations near Australian and Antarctic coasts roughly correspond to regions of oceanic upwelling and continental shelf areas. Rhyther (1963) noted that Antarctic waters may be the most prolific producers of primary marine plankton in the world, with the output peaking in upwelling zones. It has been suggested by Schnell (1974) and Schnell and Vali (see 31-97 or B-

17284) that the high ice nucleus concentrations observed over these suspected areas of high plankton growth may be related to plankton-associated ocean-derived nuclei.

F-20307
Ohtake, T., **Ice crystals in the Antarctic atmosphere,** International Conference on Cloud Physics, Boulder, Colorado, July 26-30, 1976. Collection of preprints, Boston, Mass., American Meteorological Society, 1976, p.484-487, 8 refs.

Studies of atmospheric ice crystals from a cloudless sky were carried out from Dec., 1974 to Jan., 1975, at Amundsen-Scott Station in order to understand the mechanism of their production and their influence on the antarctic climate. In contrast to arctic regions, the environment in which ice ice crystals form at the South Pole seems to have neither abundant nuclei nor high water vapor availability. Concentration, shape, size and chemical composition of ice crystals, and data on air circulation, temperature and humidity are recorded and analyzed.

F-20308
Wilson, A.T., **New Zealand work at Vostok Station,** *New Zealand antarctic record,* 1978 1(1), p.5-6.

Studies conducted at Vostok during the 1977/78 season were geared to research on the geochemistry of surface snow and ice cores. From such studies it is possible to determine annual accumulation and evaporation, and hence total precipitation. The Na content of snow at Vostok was lower than that at the other study sites on the ice sheet. The Vostok core at its 960 m level was dated at 51,000 years old. It was found that the accumulation at the Vostok site, which has a central position on top of the East Antarctic ice sheet, during glacial times, was only half that of post-glacial times. The research on the core also suggests that prior to 47,000 years ago, the East Antarctic ice sheet appeared to be rising rapidly (several cm per year). It might possibly have been recovering from a surge that took place some time before 51,000 years.

F-20312
Bradford, J.M., **Ross Ice Shelf Project (RISP) 1977-78,** *New Zealand antarctic record,* 1978 1(1), p.13-14.

New Zealanders participated in field studies of the Ross Ice Shelf Project (RISP) access hole at site J-9 drilled during the 1977-78 season. The physical oceanography, geology and biology of the water column and sea floor beneath the ice shelf were investigated. Moving crustaceans were observed with a T.V. camera and trapped for identification purposes.

F-20319
Robinson, P.H., Hull, A.G., **Glacial deposits and the Taylor Glacier,** *New Zealand antarctic record,* 1978 1(1), p.34-38, 15 refs.

Ice velocity, ablation and surface temperature were measured in the marginal zones of Taylor Glacier. Investigations indicate a basal origin for most of the subglacial and englacial debris, and movement from ice deformation, with no basal slip. This suggests that marginal and even central zones of the Taylor Glacier may be frozen to the bed. Investigations in the ice-free drift-covered valleys surrounding Taylor Glacier reveal two phases of well preserved moraine deposition, assigned the names "early" and "late" on the basis of their relative proximity to the present glacier margin. The sharp contrast in moraine form and constituents suggests a change in mode of deposition, which reflects a possible dynamic change within the glacier system.

F-20329
Buĭnitskiĭ, V.Kh., **Some regularities of distribution and formation of floating sea ice in the Antarctic,** Seventh voyage of the R/V Ob',,1961-62, Jerusalem, Israel Program for Scientific Translations, 1968, p.21-28, TT 68-50312, For Russian original see 3F-4102.

Sea ice limits are mapped for the months from Dec. to April, 1961-62, according to continuous observations conducted by the *Ob'* in the area from the Princess Astrid Coast to the Shackleton Ice Shelf. Descriptions are given of ice conditions according to month and latitude. Four ice zones were observed during the last approach south by the *Ob'* to Lazarev Station on April 18-19. On April 20 at about 69.3S, 22E, further movement south became impossible.

F-20330
Buĭnitskiĭ, V.Kh., **Melting and disintegration of shore ice in the Davis Sea,** Seventh voyage of the R/V Ob',,1961-62, Jerusalem, Israel Program for Scientific Translations, 1968, p.29-37. TT 68-50312, For Russian original see 3F-4103.

Ice thickness, snow thickness, and position of the ice surface relative to sea level of shore ice in the Davis Sea on the Mirnyy road were studied in Jan. and Feb., 1962, for cargo operations. Data obtained from 12 ice cross sections are appended. An unloading place for the *Ob'* and the *Kooperatsiia* was chosen near Mabus Point. During cargo operations continuous observations were made of ice conditions, and systematic measurements were taken of ice and snow thicknesses, melting, and deformation. On Jan. 29 further cargo operations became impossible due to the intense melting. On Feb. 4 all the shore ice from the Mirnyy road was gone, except for a small field of broken shore ice between Haswell and Fulmar Is.

F-20331
Buĭnitskiĭ, V.Kh., Dmitrash, Zh.A., **New data on the physics of antarctic sea ice,** Seventh voyage of the R/V Ob',,1961-62, Jerusalem, Israel Program for Scientific Translations, 1968, p.38-76, TT 68-50312, For Russian original see 3F-4104.

Determinations of brine content, density, flexural strength, compressional strength, and elastic modulus were carried out on 15 blocks of ice, 8 from 1-yr-old shore ice in Alasheyev Bight, and the remainder from ice in various stages of formation in the open sea between Alasheyev Bight and Lazarev Station. Results of each of the determinations are appended, with corresponding ice descriptions.

F-20332
Buĭnitskiĭ, V.Kh., **Influence of diatoms on the structure and strength of sea ice,** Seventh voyage of the R/V Ob',,1961-62, Jerusalem, Israel Program for Scientific Translations, 1968, p.77-82, TT 68-50312, For Russian original see 3F-4105.

Sixteen samples of diatomaceous shore ice were collected in Alasheyev Bight by the *Ob'* in Feb. and March, 1962. The spatial distribution of diatoms in the ice is described. Qualitative and quantitative diatom contents were studied from the meltwater of the ice samples, each fixed with a solution of 40% formalin. Fifty different species were observed. Diatom aggregations weaken the ice along the orientation of the diatom masses. Mean values are given for flexural strength in ice layers with various diatom contents; flexural strength of diatomaceous ice is lowest and compressional strength is reduced by one-half when the force is applied normal to the plane of freezing.

F-20333
Dmitrash, Zh.A., **Results of iceberg observations,** Seventh voyage of the R/V Ob',,1961-62, Jerusalem, Israel Program for Scientific Translations, 1968, p.83-97, TT 68-50312, For Russian original see 3F-4106. 2 refs.

Iceberg observations were conducted from the *Ob'* and *Kooperatsiia* during the seventh Soviet Antarctic Expedition in 1961-62. Iceberg quantity and distribution are mapped along the routes from Princess Astrid Coast to the Shackleton Ice Shelf. The principal factor in iceberg distribution is the presence of ice shelves and outlet glaciers. Other factors discussed are surface ocean currents, atmospheric circulation, and shoal areas. Tabulations are appended of continuous iceberg counting along the routes and of iceberg dimensions.

F-20336

Shamont'ev, V.A., **Results of ice observations in Alasheyev Bight,** Seventh voyage of the R/V Ob',,1961-62, Jerusalem, Israel Program for Scientific Translations, 1968, p.116-138, TT 68-50312, For Russian original see 3F-4109.

Ice observations in Alasheyev Bight were conducted from Jan. to April, 1962. The large amount of shore ice here is promoted by the dissected coastline, the wide expanse of continental shelf, and the presence of shoals and icebergs. Indications are that the shore ice is only 1 yr old. Transport over the shore ice may be hindered by the many open crevasses. During breakup of the shore ice navigable areas of open water are formed. During ice breakup waves and swells weaken the ice structure and speed its destruction. After breakup, the bight is cleared of ice by the prevailing offshore winds; this condition may last as long as a month. The most favorable ice conditions for navigation were observed in March. Drifting ice is found in the bight throughout the summer, the amount decreasing from spring to summer; a minimum is reached just before the period of most intensive breakup, after which the drifting ice fields become more numerous.

F-20337

Buĭnitskiĭ, V.Kh., **Structure and characteristics of fast ice in Alasheyev Bight,** Seventh voyage of the R/V Ob',,1961-62, Jerusalem, Israel Program for Scientific Translations, 1968, p.139-146, TT 68-50312, For Russian original see 3F-4110.

At the end of Feb., 1962, during the second trip of the *Ob'* to Alasheyev Bight, the west side of Enderby Land was enveloped with a solid field of shore ice with a width of 50 mi in the Lena Bay region, 42-45 mi in Amundsen Bay, and 30 mi in Alasheyev Bight. A system of ice cross sections was made during the trip, with measurements of ice and snow thicknesses, snow density, and position of the surface of the ice relative to sea level. These tabulations are appended. Total breakup of the shore ice took place on March 30-31; when the *Ob'* returned to Alasheyev Bight on April 12, all the broken ice had been carried out to sea.

F-20356

Keliher, T.E., Ackley, S.F., **Comparison between derived internal dielectric properties and radio-echo sounding records of the ice sheet at Cape Folger, Antarctica,** *U.S. Army Cold Regions Research and Engineering Laboratory,* CR 78-04, Apr. 1978, 12p., ADA-055 245, 17 refs.

Measured physical properties of core to bedrock taken at Cape Folger, East Antarctica, are used to compute a profile of dielectric properties and from this, a depth-reflection coefficient profile for comparison with the observed radio-echo reflections. The measurements available on physical properties are: density variations, bubble size and shape changes, and crystal fabric variations. The close correspondence between the depths of the bubble shape changes (which are definitely deformational features), and the depths of the density variations, and between both of these and the radio-echo layers, indicates that deformational events in the ice sheet's history are represented by the variations in the physical property and associated radio-echo records. (Auth. mod.)

F-20374

Torii, T., Yamagata, N., Ossaka, J., Murata, S., **View of the formation of saline waters in the dry valleys,** *Dry Valley Drilling Project (DVDP). Bulletin.* May 1978 No.8, p.96-101.

This paper is intended to show that glacial melt waters and even snow and ice can give saline waters by evaporation and freezing. The chemical compositions of different types of waters in the dry valleys (snow, ice, glacier melt waters, lake waters and sea water) are illustrated together with changes in the chemical composition of sea water when concentrated under frigid conditions. Fresh water pools, formed by precipitation and/or melt water from glaciers, although they contain much calcium, should be concentrated by a mechanism similiar to that of sea water under frigid conditions and result in the formation of highly saline waters in the dry valleys.

F-20391

Weiss, H.V., Herron, M.M., Langway, C.C., Jr., **Natural enrichment of elements in snow,** *Nature.* July 27, 1978 274(5669), p.352-353, 11 refs.

Snow samples dated between AD 1170 and the 1800s from Barrow, Alaska and New Byrd Station, Antarctica were analyzed for content of about 13 chemical elements. Sources for the enrichment process are suggested, including volcanism, man-made pollution, and vegetation.

F-20392

Oliver, J.S., O'Connor, E.F., Watson, D.J., **Observations on submerged glacial ice in McMurdo Sound, Antarctica,** *Journal of glaciology.* 1978 20(82), p.115-121, 12 refs.

Several large submerged ice masses are described from along western McMurdo Sound, Antarctica. The most important discovery is that Cape Chocolate and the adjacent island that form Salmon Bay are large, grounded ice masses mounted with morainal sediment. Both features are probably remnants of a past expansion of the Ross Ice Shelf. As such, their strata and potential temporal markers may help to unravel the glacial geological chronology of McMurdo Sound. The island was connected to Cape Chocolate during the early British Antarctic expeditions and split away between 1908 and 1956. Large sections of the Ross Ice Shelf have broken out along western McMurdo Sound several times since 1908. Ice walls grounded in shallow water were only observed near large receding ice masses. The location of these walls also corresponds to the recent calving pattern of the Ross Ice Shelf. (Auth.)

F-20393

Warburton, J.A., Linkletter, G.O., **Atmospheric processes and the chemistry of snow on the Ross Ice Shelf, Antarctica,** *Journal of glaciology.* 1978 20(82), p.149-162, 25 refs.

Correlations between chemical profiles (Na, K and Mg) in three 2 m deep pits, separated by hundreds of kilometers on the Ross Ice Shelf, suggest that the passage of major storm systems is often recorded as peaks in cationic concentration in the snow-pack on the Ice Shelf. The magnitude of the peaks appears to be a function of both storm intensity and the extent of sea ice adjoining the Ross Ice Shelf. Samples were collected from a network of 21 shallow pits on the Ice Shelf. Although concentration of impurities in the snow varies as a function of distance from the sea on northern portions of the Ross Ice Shelf, a more complex relationship exists in the interior of the Shelf. A distinct chemical zone south of Roosevelt Island may reflect the presence of a "cyclone graveyard." Non-marine cationic ratios in the southern portion of the Ice Shelf suggest the significant influence of a fractionated marine aerosol and the presence of a second, continental aerosol source. Ionic ratios in rime deposited on the Ross Ice Shelf during periods of fog are interpreted as reflecting the production

of fog droplets from the chemically-enriched surface microlayer of the ocean. Diffusionally grown snow crystals also have non-marine ratios. In contrast, snowfall associated with peaks in chemical concentration in particular, and the snow-pack on northern portions of the Ross Ice Shelf in general, yield near-marine ionic ratios. This indicates that the chemistry of snow which is near the coast and from major storms is dominated by large droplet riming and the associated presence of a high proportion of sea-salt particles. (Auth.)

F-20398

Wilhelm, F., **Snow and glacier studies** [Schnee- und Gletscherkunde], New York, Walter de Gruyter, 1975, 434p., In German. Refs. p.379-414.

This textbook includes glaciological studies in the Arctic, temperate mountains and the Antarctic. Data on snow and ice for the Antarctic are scattered throughout the book and may be located through subject and geographical indexes.

F-20402

Piper, D.J.W., **Use of ice rafted marine sediments in determining glacial conditions,** *Revue de géographie de Montréal*, 1976 30(1-2), p.207-212, In English with French summary. 34 refs.

The transport of sediments by icebergs into the open sea has been an important sedimentary process in the Arctic and Antarctic regions throughout the late Cenozoic. Factors controlling rates of ice-rafted sedimentation are described. Ice-rafted pebbles are important clues in deciphering continental geology, and sometimes include lithologies not known in outcrop on land. Some icebergs appear to travel around Antarctica in the circumpolar current, but the petrology of ice-rafted sediments suggests that the main dispersal directions are almost radial to the continent.

F-20403

Civiak, R.L., **Icebergs for use as freshwater,** Washington, D.C. U.S. National Oceanic and Atmospheric Administration, July 1978, 8p., 23 refs. NOAA Current issue outline 78-1.

Some of the issues to be dealt with before a regular program of iceberg towing can be established are raised. A program for harvesting icebergs would require suitable techniques for locating, harnessing, transporting, and insulating the icebergs, and making the water available for use. Other important considerations are the environmental effects and legal responsibilities involved in transporting icebergs and locating them offshore. Considerable interest in iceberg use has been generated by Prince Mohammed Al Faisal, past head of Saudi Arabia's Saline Water Conversion Program, who recently formed a private corporation, Iceberg Transport International (ITI), to continue studying the problem. With the National Science Foundation and other organizations, ITI sponsored a major conference on iceberg utilization which was held in Ames, Iowa, Oct., 2-6, 1977. The consensus was that the project would be immensely difficult, but may well be feasible.

F-20414

Brooks, R.L., Campbell, W.J., Ramseier, R.O., Stanley, H.R., Zwally, H.J., **Ice sheet topography by satellite altimetry,** *Nature*, Aug. 10, 1978 274(5671), p.539-543, 20 refs.

The surface elevation of the southern Greenland ice sheet and surface features of the ice flow are obtained from the radar altimeter on the GEOS 3 satellite. As changes in surface elevation are indicative of changes in ice volume, the mass balance of the present ice sheets could be determined by repetitive mapping of the surface elevation; and the surface could be monitored to detect surging or significant changes in ice flow. Surface topography surveying of the Antarctic ice sheet is discussed.

F-20419

France. Centre national de la recherche scientifique. Laboratoire de glaciologie, **Chronicle of accomplishments in 1973** [Chronique des missions effectuées en 1973], Grenoble, [1974?], 37p., In French. See also 28-2643 or A-13093.

French work in glaciology in the field in Antarctica and in the Alps and in various meetings and conferences is briefly reviewed. Measurements and analyses of snow samples collected during the traverse from Dumont D'Urville to Vostok are mentioned, as well as barometric leveling work, slope, meteorological, and radioactivity measurements. Brief accounts of several of the meetings are given.

F-20420

France. Centre national de la recherche scientifique. Laboratoire de glaciologie, **Chronicle of accomplishments in 1974** [Chronique des missions effectuées en 1974], Grenoble, [1975?], 31p., In French.

Briefly outlined are glaciological activities in Adelie Land, Kerguelen, Greenland, and the European Alps and meetings and travels of the scientists and administrators. In Antarctica, the main emphasis centered on recovery and analysis of cores from the vicinity of the stations at Dumont D'Urville and Cap Prud'homme. At Kerguelen, the party studied the mass balance of Ampere Glacier and the micrometeorology of that and other Kerguelen glaciers.

F-20421

France. Centre national de la recherche scientifique. Laboratoire de glaciologie, **Chronicle of accomplishments in 1975** [Chronique des missions effectuées en 1975], Grenoble, [1976?], 20p., In French.

During 1975 the French mounted expeditions to five alpine glaciers, concentrating on setting out several lines of buoys to mark safe and dangerous areas. In the Antarctic they established a summer camp at Dome C (about 2/3 the distance from Dumont D'Urville to Vostok) for meteorological and glaciological observations and aerial radio soundings.

F-20422

France. Centre national de la recherche scientifique. Laboratoire de glaciologie, **Chronicle of accomplishments in 1976** [Chronique des missions effectuées en 1976], Grenoble, [1977?], 21p., In French.

In outline form, the expeditions to five Alpine glaciers are described in terms of participants, general aim of the expedition, and work accomplished. The antarctic expedition set out to take glaciological measurements and samples along the Adelie Coast, 273 km along the Dumont D'Urville-Vostok axis. An abbreviated diary of the latter traverse, including an inspection of an earlier aircraft accident site, is given.

F-20423

France. Centre national de la recherche scientifique. Laboratoire de glaciologie, **Activities report 1976** [Rapport d'activité 1976], Grenoble, [1977?], 34p., In French.

The report describes the year's activities in terms of the various programs dealing with snow, ice, glaciers and numerous other cold weather phenomena. Some of the work involves geochemistry of the polar cap, plate tectonics, physics of precipitation, and katabatic winds of Adelie Land. Several other programs focus on Antarctic areas.

F-20443

Hudson, J.D., **Oxygen isotope studies on Cenozoic temperatures, oceans and ice accumulation,** *Scottish journal of geology*, 1977 13(4), p.313-325, Refs. p.323-325.

The most successful application of oxygen isotope studies on fossils has been the elucidation of the relationship between temperature changes, glaciation, and the isotopic composition of the oceans during the Pleistocene, from analyses of planktonic and benthonic foraminifera. This work is now being extended into the earlier Cenozoic, and is revealing the history of the accumulation of the Antarctic ice and much else about Cenozoic climates. A review of the principles, limitations and future promise of the method is given by critically comparing some recent contributions. (Auth.)

F-20448

International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977, Husseiny, A.A., ed, **Iceberg utilization,** New York, Pergamon Press, 1978, 760p., Refs. passim. For selected papers see 32-4707 through 32-4758 or B-20478, F-20448 through F-20477, or F-20479 through 20490.

DLC TD353.I53 1977

This volume of 68 papers provides a comprehensive state-of-the-art assessment of iceberg utilization. The meeting was international in scope, with participants from Australia, Canada, Cayman Is., Chile, Egypt, France, Germany, Greece, Holland, Italy, Libya, Monaco, Saudi Arabia, Sweden, Switzerland, Syria, United Kingdom, and the United States. All phases of the subject were covered, including locating, tracking and selection of icebergs; the physical properties of icebergs; methods of transport; economic, ecological, legal and organizational aspects; iceberg dynamics and protection; and the utilization of icebergs for water, weather modification and power. Among the contributors is Prince Mohammed Al Faisal of Saudi Arabia, who provided both the principal incentive and significant support for the meeting.

F-20449

Galal, S., **Challenges of iceberg utilization,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.8-10.

DLC TD353.I53 1977

Among the challenges which will be faced in the implementation of iceberg utilization projects are the international problems, one of which is the uncertain legal status of Antarctica, the task of stimulating interdisciplinary research and development effort, and the need to stimulate the interests and cooperation of the world governments and big industries. The public attitude toward the use of icebergs as a solution to water problems is also important. In all of these aspects the news media and public relations personnel have a responsibility to inform the people of the facts objectively. The realization of the project requires a high-quality system of management and coordination, as well as stimulation of scientific interest and the mobilization of investors and industries.

F-20450

Ponte, L., **Alien ice: an evaluation of some subsidiary effects and concomitant problems in iceberg utilization,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.11-19, 10 refs.

DLC TD353.I53 1977

Scientific uncertainty concerning some subtle environmental impacts of iceberg utilization will make plausible several types of political accusations against any who attempt such utilization. Examples are given to suggest how such accusations have been made against weather modification experiments, and how future accusations might contend that iceberg utilization experiments influence global climate. (Auth.)

F-20451

Kelley, J.J., **Icebergs - a natural resource,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.20-24, 10 refs.

DLC TD353.I53 1977

For water-scarce areas of the world, the possibility of using icebergs as a fresh water resource becomes an attractive prospect. The only consistent source for large icebergs are the Antarctic and Arctic ice shelves. The large tabular icebergs of the Antarctic appear to be most suitable for transport. Major iceberg production sites in Antarctica are the Amery and the Ross Ice shelves. Icebergs could be towed to Australia and the Atacama desert region on the western coast of Chile. A further possibility is the Filchner Ice Shelf, which could supply icebergs to the Namib Desert area on the west coast of Africa. Sea ice is another factor to be considered in towing icebergs. Many icebergs have been sighted near the edge as far north as 50S. Ideally, it would be advantageous to select an optimum combination of iceberg size, shape, and location. Satellite technology undoubtedly will greatly assist in the selection of icebergs of potential interest as a resource for fresh water.

F-20452

Hult, J.L., **Global role of antarctic iceberg exploitation,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.29-31, 4 refs.

DLC TD353.I53 1977

Reasonable estimates of water supplies and uses are provided in order to clear up misconceptions and to enable the interpretation of the potential global role of Antarctic iceberg exploitation. (Auth.)

F-20453

Bader, H., **Critical look at the iceberg utilization project,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.34-44.

DLC TD353.I53 1977

A look at the more important publications on iceberg utilization indicates that little attention has been given to the problem of converting large masses of ice, floating in salt water at destination, into freshwater delivered to land, and almost no attention has been given to the glaciology of icebergs. This paper examines the problems associated with the engineering feasibility of iceberg utilization from the determination of the size and shape requirements for the berg to be towed, to its delivery in large pieces to a protected harbor to await final towing to its destination. Emphasis is placed on iceberg mechanics and physics.

F-20454
Weeks, W.F., Mellor, M., **Some elements of iceberg technology,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.45-98, 51 refs.

DLC TD353.I53 1977

Many of the technical questions relating to iceberg transport are given brief, but quantitative, consideration. These include iceberg genesis and properties, the mechanical stability of icebergs at sea, towing forces and tug characteristics, drag coefficients, ablation rates, and handling and processing the iceberg at both the pick-up site and at the final destination. In particular, the paper attempts to make technical information on glaciological and ice engineering aspects of the problem more readily available to the interested planner or engineer. (Auth.)

F-20455
Swithinbank, C., **Remote sensing of iceberg thickness,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.100-107, 12 refs.

DLC TD353.I53 1977

A pulsed radar was mounted in a series of aircraft to measure the thickness of Antarctic tabular icebergs and the ice shelves from which they calve. Echoes displayed on an oscilloscope were continuously recorded on 35 mm film. Good reflections were obtained from the surface and from the ice/water interface except where brine infiltration was extensive. Measurements of dielectric absorption may indicate the degree of bottom roughness or the presence of ice frozen from sea water. (Auth.)

F-20457
Kovacs, A., **Iceberg thickness and crack detection,** MP 1128, International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.131-145, 18 refs.

DLC TD353.I53 1977

Results obtained with an impulse radar system used to profile the thickness of and detect cracks in a tabular iceberg in McMurdo Sound, Antarctica, and an ice island in the Beaufort Sea near Flaxman Island, Alaska, are presented. Graphic records are shown of the radar impulse travel time which clearly reveal, for the first time, the bottom relief of each ice formation. Also detected in the antarctic iceberg was an echo signature from an infiltration-brine layer. The impulse radar signature of a 3-m wide crevasse in the McMurdo Ice Shelf is also shown. The time of flight of the radar impulse in the ice island is compared with a 24.05-m drill hole measurement of the ice thickness. The effective velocity of the radar impulse in the ice island was found to be 0.16m/ns and the effective dielectric constant of the ice to be 3.5. The findings show that tabular icebergs are flawed by cracks or crevasses which could be expected to propagate through the ice when an iceberg reaches the edge of the pack where it is subject to stresses induced by sea swell and waves. (Auth.)

F-20458
El Kassas, I.A., **Potential application of remote sensing in locating and tracking of antarctic icebergs,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.146-157, 9 refs.

DLC TD353.I53 1977

A comprehensive review of the essential scientific principles of the effective remote sensing systems to be used in locating and tracking antarctic icebergs is briefly given with their evaluation in the light of their operational potentiality to obtain the necessary accurate information. The applicability, advantages and disadvantages of each sensor are presented to enable the planner for iceberg utilization to select the best fit sensing technique. Comparatively, sequential Landsat multispectral scanner (MSS) data can provide enormous amounts of information which would be operationally used in accurate tracking of Antarctic icebergs. Supportive information can be obtained from microwave radiometers and thermal infrared scanners on meteorological satellites such as Nimbus, where their electrically scanning microwave radiometer (ESMR) and the temperature-humidity infrared radiometer (THIR) record useful complementary data. (Auth. mod.)

F-20459
O'Lenic, E.A., **U.S. Navy global ice analysis and forecasting,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.123-130, 10 refs.

DLC TD353.I53 1977

The operational role of the Fleet Weather Facility, Suitland Ice Operations Department in ice analysis and forecasting on a global scale is presented, stressing Antarctic operations. Operational ice analysis and forecasting methods, imagery, ship routing, iceberg identification and tracking, and seasonal ice forecasting are discussed, with special emphasis on their availability and usefulness as planning tools. (Auth.)

F-20459
Holdsworth, G., **Some mechanisms for the calving of icebergs,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.160-175, 20 refs.

DLC TD353.I53 1977

This paper reviews several mechanisms whereby calving of icebergs may occur. An ice shelf or ice tongue may fracture in a number of locations, evidently in all cases, primarily as a result of the induction of a bending moment superimposed on the normal expansive creep of the floating slab. The bending may occur (a) at the hinge-line: (b) at the seaward margin: or (c) at some intermediate location. Hinge-line calving may be caused by the geometry of the bedrock in the hinge (flotation) zone, or by the action of the tides, or a combination of these two effects. Marginal calving can be explained by a process of continuous downwarping of the frontal ice cliff, due to the imbalance there between the "hydrostatic" stress in the ice and the sea water pressure. Icebergs thus produced will be strongly prismatic and generally tilted. Calving at intermediate distances might be explained by the action of alternating bending stresses set up as the slab vibrates in a particular mode due to ocean wave excitation. Because these stresses are cyclic and because crevasses occur in floating glaciers, the

magnitude of the stresses needed for failure may be quite small. Actual cases of calving in antarctic areas are documented.

F-20460
Smith, R.A., **Iceberg cleaving and fracture mechanics - a preliminary survey,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.176-190, 22 refs.

DLC TD353.I53 1977

This paper introduces, in a simple way, the subject of fracture mechanics, which enables estimates to be made of the forces required for various cleaving methods. It is shown that the huge forces required to cleave an iceberg arise not from the strength of the ice itself, but from compressive stresses due to the ice weight. A technique involving wedging with water pressure is shown to be promising in so far as it should be possible to extend a crack at least to the water line in this way. However, formidable engineering problems remain to be investigated before claims could be made that a solution to the problem has been found. (Auth.)

F-20461
Stolfi, R., **Ice moving in sea water,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.199-219.

DLC TD353.I53 1977

In efforts to establish the technical feasibility of towing antarctic ice to arid parts of the world, experiments were conducted to obtain information on moving ice melting in sea water and the associated engineering required for adequate insulation. In two large scale experiments, 16ft ice masses scaled geometrically to resemble antarctic tabular icebergs were towed in Monterey Bay under conditions which would ensure turbulent flow and satisfactory Reynolds numbers. A third experiment was conducted on small pieces of ice under controlled laboratory conditions. The experiments are described and illustrated, and data on rates of melt, volumetric changes and associated volumetric dimensions are presented.

F-20462
Morgan, V.I., Budd, W.F., **Distribution, movement and melt rates of antarctic icebergs,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.220-228, 13 refs.

DLC TD353.I53 1977

The general distribution and number density of icebergs in the Antarctic is known. More recent studies of iceberg size distributions allow the volume distributions to be calculated. Assuming a steady state the flux of ice into the ocean from the Antarctic ice sheet implies a melt rate of the coastal icebergs. Further from the coast recent results from the EOLE-iceberg program allows the northward drift rates of icebergs to be estimated which, together with a steady state distribution, enables the average melt rates to be calculated. The temperature data of the Antarctic waters from Gordon and Goldberg allows the calculated iceberg melt rates to be interpreted in terms of the temperature, time and currents at various distances from the Antarctic coast. The implications regarding the expected melt-rates of icebergs under tow to lower latitudes are investigated. (Auth. mod.)

F-20463
Griffin, O.M., **Heat, mass and momentum transfer effects on the albation of iccbergs in seawater,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.229-242, 16 refs.

DLC TD353.I53 1977

The feasibility of towing Antarctic glacial icebergs to temperature regions for conversion to fresh water is being considered, and an accurate assessment of the ice ablation resulting from the towing of icebergs through warm seawater is an important factor in considering the overall feasibility problem. Methods for minimizing the ice ablation and the potential need for insulating the iceberg during the tow can best be addressed when the heat, mass and momentum transfer processes which govern the melting are known and quantified. A short review is given of the methods recently developed at NRL for the prediction of the velocity, temperature and salinity distributions which result from the laminar flow, forced convection melting of glacial ice in seawater. This melting model is then employed as the basis for a simple turbulent flow, forced convection model for the ablation of tabular icebergs. Predictions of the melt rate, interfacial salinity and melting temperature depression at various locations along a slab are made for typical values of towing speeds, water temperatures, ice temperatures and salinities. (Auth. mod.)

F-20464
Murphy, G., **Small scale modeling of iceberg transport,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.292-300, 3 refs.

DLC TD353.I53 1977

Perhaps the most complex and challenging problem presented by the prospect of iceberg utilization is that of the actual transport. The magnitude of forces required, the possibility of fractures and fragmentation developing to cause the iceberg to roll in transit, the losses en route through melting, and possible insulation are all aspects for which answers must be obtained. This paper presents the rational design of iceberg models for predicting necessary forces, hydrodynamic stability, and melting losses for icebergs of various configurations towed along selected routes. The analysis shows that the use of such small-scale models can provide practical predictions for full-scale design. (Auth. mod.)

F-20465
Girard, D., **Underwater inspection of icebergs,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.283-289.

DLC TD353.I53 1977

During the different phases of iceberg utilization, it will be necessary to gather and maintain an accurate knowledge of the submerged part of the iceberg. This would involve divers, manned submersibles and remote-controlled vehicles. These three different means of going below the surface of the seas would bring an important contribution to the successful utilization of icebergs. (Auth.)

F-20466
Al Faisal, M., **Feasibility of using paddle-wheels for the propulsion of icebergs,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.301-314.

DLC TD353.I53 1977

A new system is suggested for the propulsion of antarctic icebergs, using paddle wheels capable of operating under water. A number of the paddle wheels will be attached to both sides of the iceberg along its length and below water level. The electric power supply for the driving units of the paddle wheels can be provided through small power generation units located on top of the iceberg or from ships accompanying the iceberg. It is suggested that the new propulsion system be used in combination with a wire-loop towing method for extra security in the event of failure of one of the systems. The technical details, including the mechanism of the new paddle wheel of both systems, are described and illustrated.

F-20467
Chirivella, J.E., Miller, C.G., **Hydrodynamics of icebergs in transit,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.315-333, 3 refs.

DLC TD353.I53 1977

The physical phenomena responsible for the different forces acting on an iceberg in transit from the polar regions are reviewed. A rationalization on the most convenient frames of reference to evaluate hydrodynamic and Coriolis forces is established, and two geostrophic invariants are identified. The near flowfield that characterizes iceberg drag and lift is discussed, and the concept of geostrophic lift is introduced. Throughout the discussion, special emphasis is given to the mathematical methods of attack on the topics enumerated above. (Auth.)

F-20468
Job, J.G., **High efficiency iceberg propulsion systems,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.339-349, 7 refs.

DLC TD353.I53 1977

A dimensionless group suitable to characterize a mechanism producing thrust by accelerating a fluid medium is introduced. The group has a value close to unity for towing propellers in the bollard pull condition. It illuminates the relationship between the thrust produced for a given power and the area of the contact surface. This group also has a linear relationship with the speed of advance within the range of speed studied here, and this relation is very similar for other thrust systems, including a sea parachute and a fixed anchor system. In particular, a parachute system with a very low power density is shown to produce effective thrust with an efficiency some five times greater than does a conventional propeller. The usefulness of this arrangement for towing icebergs from the Antarctic is discussed.

F-20469
Davis, T.A., **Osmotic propulsion of icebergs,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.350-358, 6 refs.

DLC TD353.I53 1977

The usual suggestions for transporting icebergs have dealt with pushing or pulling them with tug boats or submarines. An alternative approach is to utilize a form of solar power, specifically the difference in osmotic pressure between sea water and melt water from the icebergs. Even if an iceberg is wrapped in a protective film, there will still be considerable melting of the ice in transit. Since long-term containment of the melt water is probably impractical, it will likely be discarded. If the melt water could be diverted to an osmotic propulsion system, its considerable potential energy could be utilized. The osmotic pressure of sea water at ocean temperatures is about 23 atmospheres or 2.3 MPa. When sea water and fresh water are separated by a semipermeable membrane, e.g., a reverse-osmosis membrane, osmotic pressure forces the fresh water through the membrane into the sea water and causes its volume to expand. This expansion can be used to drive a turbine, or it can be released through a jet to propel the iceberg. With full utilization, the osmotic pressure of the melt water would be sufficient to transport a large iceberg across the equator with the assistance of a support ship. However, inefficiencies in the system prevent full utilization of the melt water. It is the purpose of this paper to estimate the magnitude of these inefficiencies and assess the practicality of osmotic propulsion of icebergs. (Auth. mod.)

F-20470
Fuhs, A.E., **Self propelled iceberg,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.359-378, 9 refs.

DLC TD353.I53 1977

The concept of a self-propelled iceberg is developed, using a thermodynamic cycle similar to Ocean Thermal Energy Conversion (OTEC). Calculations show that a propulsion pod developing 2.224 megaNewtons (500,000 lb) thrust requires a power of 6.8 megaWatts, assuming an ideal cycle. Propeller diameter is 23 meters. For a transit from Antarctica to Los Angeles, 1.6 per cent of the iceberg is converted to water as a result of power extraction. An alternate concept using electrical propulsion is briefly presented. The thermodynamic cycle based on anhydrous ammonia is discussed.

F-20471
Denner, W.W., **Environmental factors along an iceberg tow route in the Indian Ocean,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.389-416, 11 refs.

DLC TD353.I53 1977

The concept of providing fresh water from antarctic icebergs for arid regions has tremendous potential benefits. Unfortunately, conditions in the Indian Ocean are not favorable. Environmental factors to be considered include warm, salty water, large air-sea heat flux, high air and water temperature, severe storms, and the presence of eddies in the ocean. In light of the high ablation rates that are observed when icebergs enter the warm waters of the North Atlantic, it will be necessary to provide thermal insulation and protection for the iceberg, or an adequate method must be found to collect the melt water along the route.

F-20472
Hussain, S.N., **Iceberg protection by foamed insulation,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.423-472, 25 refs.

DLC TD353.I53 1977

A technique is proposed to insulate antarctic icebergs using foamed plastic. The use of foam is superior to plastic wraps because of ease in application, better insulating properties, and better stability in transit. Polyurethane foam is selected since it has the least thermal conductivity of all known insulating foam materials. Physical properties are given at various temperatures, densities, and pressures. Cost estimates are given, and methods of application are discussed. Polyurethane foam can be sprayed on the surface of the iceberg by specially-built equipment, which can operate under water by remote control. The foam can be applied so as to conform to uneven surfaces. Two types of foam are considered, namely the open-cell and closed-cell construction. (Auth.)

F-20473
Cluff, C.B., **Use of floating solar collectors in processing iceberg water,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.474-479, 3 refs.

DLC TD353.I53 1977

A floating tracking platform equipped with parabolic collectors concentrating sunlight on photovoltaic cells is described. The unique tracking system, made possible by using a floating platform, allows for the construction of inexpensive low-profile concentrating collectors. The concentrating collectors would focus concentrated sunlight on a back of photovoltaic cells. These cells must be cooled for maximum efficiency. This type of collector, under development at the University of Arizona, could be floated next to a moored iceberg to provide waste heat for melting the ice. This combination should improve the efficiency of the photovoltaic cells and reduce the costs of ice-to-water conversion. It has been estimated that an antarctic iceberg could yield 1.000 billion cu m of water annually. This coupled system would make it possible to provide both water and power to arid coastal areas.

F-20474
Kusayer, T.A., **Role of iceberg utilization research and development in enhancing the transfer of technology in Saudi Arabia,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.482-491, 5 refs.

DLC TD353.I53 1977

An iceberg utilization research and development (R & D) program would involve participation of various industries and engineers and scientists from different disciplines. A successful program has to be of large magnitude and wide scope since it would involve the pooling of international and national resources to investigate, design and carry out prototype experiments. Thus a high flux of technology transfer from science and present industries to iceberg technology is required. Carrying this program partially in Saudi Arabia would widen the base of economic and industrial development of the country. In addition, the R & D program would result in enormous fallout of scientific knowledge and innovations. An assessment is made here of different routes of the technology transfer process and of the variety of industrial and human power developments which can be enhanced by undertaking R & D iceberg utilization programs. (Auth.)

F-20475
Ahmed, S., Cho, H.Y., Abdul-Fattah, A.F., **Making decisions on iceberg utilization based upon multivariate utility theory: a case study in Saudi Arabia,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.492-502, 4 refs.

DLC TD353.I53 1977

A decision-tree model is developed for introducing icebergs from Antarctica in the water system of Saudi Arabia. The utility theory is then applied to evaluate policies pertaining to various strategies of iceberg utilization. The multiattributes of water projects are analyzed, and the corresponding utility functions are synthesized. The attributes encompass social, technical and economic factors. The multivariate utilities are evaluated for each strategy. The decision options include concentrating only on development of large-scale desalination plants. Although the analysis made here is basically for a single scenario of choosing alternate water sources, the method is shown to be useful in developing a myriad of strategies to select the optimal decision under various restrictions, including the level of funding of iceberg utilization programs. (Auth.)

F-20476
Job, J.G., **Yields and energetics in moving unprotected icebergs to southern continents,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.503-527, 21 refs.

DLC TD353.I53 1977

The towing of unprotected icebergs from the Antarctic continent (66S) to latitude 38S has been simulated, using a quasi-one dimensional steady dynamic model which is explained in detail. It was found that nominal towing accelerations in excess of 2 x .00001 m/sq s were capable of delivering ice over this route in most circumstances, with minimum energy consumptions at around .0001 m/sq s. While unprotected icebergs could be delivered with about 50% yield to latitude 38S, the rate of deterioration in the warm waters indicates that protection would be required for longer journeys. The towing simulation was most sensitive to north-south current components, the total towing distance, and the rate of iceberg deterioration. Efforts directed towards locating suitable icebergs in the 50S to 60S regions, and towards increasing the knowledge of the changing current patterns in the Southern Ocean would be well rewarded, as would a knowledge of the mechanisms and rates of deterioration of icebergs in warm seas. (Auth.)

F-20477
Hult, J.L., **Pilot program for exporting antarctic icebergs,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.528-535, 4 refs.

DLC TD353.I53 1977

A pilot program is described that will easily, quickly, effectively and inexpensively demonstrate the feasibility and environmental im-

pact of exporting Antarctic icebergs for global use, and compare alternative techniques for the design of operational systems. The following aspects of the program are discussed: iceberg selection, configuration and harnessing, the exporting fleet and energy requirements, the program course and schedule, iceberg protection, terminal selection and preparation, iceberg use and conversion, program coordination, costs and potential revenues.

F-20478

Abdul-Fattah, A.F., **Role of iceberg utilization in solving the Saudi Arabian water problems,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.536-555, 19 refs.

DLC TD353.I53 1977

The demand pattern of water in Saudi Arabia is analyzed for the next decade. Plans to augment present water supplies are discussed to provide a framework for the investigation of the potential of antarctic icebergs as a water resource. It is shown that the present and future demands of water in the domestic and industrial sectors cannot be met satisfactorily by conventional desalination units. The development of Saudi Arabia, especially in industrial and agricultural activities, cannot be easily achieved without comprehensive programs to explore novel options, such as utilization of icebergs for fresh water. (Auth.)

F-20479

Basmaci, Y., Jamjoom, M.O., **Delivery of icebergs to Saudi Arabia—an assessment,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.556-576, 12 refs.

DLC TD353.I53 1977

An iceberg towing operation from Antarctica to Saudi Arabia is considered here. The factors affecting towing forces are analyzed. Insulation of icebergs is recommended to keep ablation within economical limits. It is concluded that the Coriolis force is opposed by the drag of the water. Therefore, the Coriolis force does not affect the system with its full magnitude. However, that force is shown to be helpful in towing if the route between Antarctic and Saudi Arabia is selected properly. The West Indian ocean currents are summarized, and a route for towing icebergs from the Weddell Sea to Saudi Arabia is selected.

F-20480

Bishop, W.W., **International law problems of acquisition and transportation of antarctic icebergs,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.586-596, 22 refs.

DLC TD353.I53 1977

Some of the international law problems connected with the acquisition of icebergs and transportation across the ocean and those arising at the destination where the berg is stored and converted into usable fresh water are discussed: and several measures to avoid disputes are outlined. If the icebergs are to be removed within 12 mi of shore or from within the 200-mi economic zone, it would seem desirable to seek the permission of the claimant state. So long as the berg and the towing vessels stay on the high seas (beyond 200 naut mi from the nearest land) during transport, there should be relatively little international difficulty. Internationally accepted navigation rules should be complied with, however, and it may be necessary to avoid established shipping lanes or to use great care when crossing them. The closest cooperation of the towing enterprise with the country of destination appears to be essential. Some of the ways in which cooperation between international organizations could facilitate the operations of the proposed iceberg project are outlined.

F-20481

Chamoux, J.-P., **Some international implications of iceberg transfer,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.597-603, 25 refs.

DLC TD353.I53 1977

This paper is devoted to demonstrating that Antarctic iceberg exploitation for fresh water resource basically conforms to general principles of international law. The main international disputes that could be raised by a third party to iceberg transfer are analyzed, showing that some precautions can avoid main troubles for the exploiting states or corporation. The first part of the paper deals with the status of icebergs as a raw material. This analysis shows that many suitable locations can be chosen in high sea waters where harvesting icebergs will be harmless to any state claim or international authority. The second part deals with iceberg oceanic routes to final melting place where water is badly needed. Several precautions are listed to prevent possible trouble with coastal states and high-sea practice for commercial ships. The emphasis is put on the necessary securities to be taken around the convoy and on liability problems in case of emergency. The overall balance seems clearly in favor of the project. (Auth. mod.)

F-20482

Burton, S.J., **Legal/political aspects of antarctic iceberg utilization,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.604-615, 24 refs.

DLC TD353.I53 1977

Four alternative approaches to removing the legal/political impediment from ice recovery operations are examined. The freedom of the seas suggest that a party to the Antarctic Treaty operating seaward of potential claimed 200-mile economic zones around Antarctica need expect little difficulty, while freedom of the seas is insufficient to stabilize the situation within 200 miles of the coast. The possibility of bilateral arrangements between claimant states and non-claimant states interested in recovering icebergs within 200 miles appears to be of doubtful value, if such a non-claimant state wishes a secure source of supply of fresh water at reasonable cost. The Antarctic Treaty Consultative Meetings offer a suitable forum for negotiation among states entitled to participate in the meetings. The General Assembly of the United Nations appears to be poorly suited for constructive deliberations. Legal/political difficulties are therefore likely to be of far less significance if iceberg recovery operations remain seaward of the economic zones, and the states involved are parties to the Antarctic Treaty. If recovery operations are desired within 200 miles of the Antarctic coast, some form of negotiated accommodation seems necessary to secure the benefits of this new fresh water source. The Antarctic Treaty system seems best suited to create a stable climate in which the utilization of Antarctic icebergs can proceed at least cost and with least risk of interference. (Auth.)

F-20483
Rosenberg, J., **Overview of the organizational, management, economic and socio-political aspects of transporting icebergs from Antarctica to the United States,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.616-622, 9 refs.

DLC TD353.I53 1977

This paper examines various aspects of transporting icebergs to the U.S., including iceberg selections, towing technology, and the cost factor, and points up the need for environmental impact studies, for an international antarctic legal authority, and for proper control and management of the project. In addition to solving the water shortage problem, the towing of icebergs will introduce a new industry to the U.S. It is estimated that the delivery of one berg could realize, after all expenses, a profit of about fifty million dollars.

F-20484
Simpson, J., **Iceberg utilization: comparison with cloud seeding and potential weather impacts,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.624-639, 21 refs.

DLC TD353.I53 1977

This paper addresses two sets of questions relative to the transportation of large antarctic icebergs to lower latitudes. First considered is the potential competitiveness of the additional water resources estimated to those which might be gained by cloud seeding. It is tentatively suggested that although the capital outlay is far greater to move icebergs, the cost effectiveness of the two methods might be comparable. Secondly, the question of the atmospheric impacts of iceberg transportation is addressed. Moving large icebergs to lower latitudes may cool the overlying atmosphere directly, or affect it indirectly by cooling the surface layers of the ocean; the oceanic impacts probably will be more important. There is evidence that cooling of the underlying surface waters would reduce the maximum windspeed of tropical cyclones and hence their destructiveness upon landfall. Whether or not iceberg transportation could usefully provide adequate cooling at the necessary times and places requires extensive scientific research and economic evaluation. Some of the necessary research steps are outlined here. Preliminary conclusions are that for tropical cyclone mitigation, the iceberg method has both promise and problems, some of the latter associated with the poor predictability of the storms. In any case, weather impacts of iceberg transportation appear to offer sufficient potential scientific and practical value to warrant the expenditures for the research necessary to document them.

F-20485
Goldman, C.R., **Ecological aspects of iceberg transport from antarctic waters,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.642-651, 9 refs.

DLC TD353.I53 1977

Final engineering decisions on transport, insulation, and melting technology will have a profound influence on ecological consideration. From antarctic experience, temporary lakes containing algae often form on the surface of glaciers, causing a decrease in albedo. This may be expected to accelerate surface melt loss during transport, unless the iceberg's exposed surface is protected as well as its sea water contact. The presence of seals, penguins, and Skua gulls on the iceberg might require discouragement during transport to reduce fecal and salt gland contamination of the ice. As the ice is transported to lower latitudes, warm surface waters will tend to move towards the ice, cool and rise, due to decrease in salinity to form a surface plume. As shallow water is approached, or where the iceberg is eventually grounded, cold water pollution could cause mortality among littoral fish and benthos in the vicinity of the berg. Reduced salinity might also cause secondary problems of osmoregulation among the fauna if melt water loss is extensive. Localized climatic changes with cooling and possible fog should be anticipated. Meromictic (non-mixing) conditions may result and might be encouraged from cold water storage on shore. On the basis of antarctic experience, eutrophic conditions in melt water could develop despite the low temperatures, if control of nutrient inputs is neglected. Although environmental problems are certain to arise from an operation of this magnitude, combining engineering and ecological design can provide for their solution. (Auth.)

F-20486
Heizer, R.T., **Energy and fresh water production from icebergs,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.657-673, 24 refs.

DLC TD353.I53 1977

Two developing technologies—ocean thermal energy conversion (OTEC) for electric power production, and iceberg utilization for fresh-water production—have potential for reducing the world's growing energy and water shortages. When combined, in the form of a dual-purpose "ICETEC' facility, they offer synergistic possibilities resulting in significant technical and cost benefits for each technology. The paper discusses the state-of-the-art of OTECs and iceberg systems, and considers a combined system which may produce more electric power than could be produced by the fuel consumed in towing an iceberg. (Auth.)

F-20487
Roberts, D.M., **Icebergs as a heat sink for power generation,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.674-688, 17 refs.

DLC TD353.I53 1977

A modification of systems designed to make use of ocean thermal gradients for power generation is proposed as an adjunct to the use of icebergs as sources of fresh water. In addition to energy production, the system provides more fresh water than corresponds to the mass of ice melted. Depending on design features, the plant can be used as a conventional SSPP (Solar Sea Power Plant) if or when icebergs are not available. (Auth.)

F-20488
Brodsky, R.F., **Locating icebergs + remote sensing,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.704-711.

DLC TD353.I53 1977

The proceedings of the workshop panel on locating icebergs and remote sensing are presented. The discussions indicate that the

proper application of available techniques of remote sensing can provide considerable important aid to the iceberg project. The state-of-the-art is such that no new developments will be necessary; however, in order to validate anticipated results, a modest experimental program must be undertaken. Remote sensing methods can readily locate "best candidate" icebergs, and then, from many, select an optimum at any given time. These methods can also assist in necessary early feasibility experiments by tracking and determining the weathering characteristics of "test" icebergs. Moreover, they can provide an important assist in early testing to determine the true magnitude of Coriolis forces; that is so vital to assess the towing problem. Finally, in an operational sense, remote sensing methods can assist by observing sea states, recommending best routes, and determining "weathering" effects during tow. Some of these evaluations are possible from the study of Arctic icebergs, but ultimately antarctic icebergs will be required for complete methodology validation.

F-20489

Schwerdtfeger, P., **Weather modification and environmental and ecological impact (caused by towed icebergs),** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.713-715.

DLC TD353.I53 1977

This paper represents a workshop discussion of the impact of iceberg towing on weather modification, the environment, and the biological population. The removal of icebergs from the Antarctic would not constitute a serious deficiency impact on the southern ocean in light of the annual volume of icebergs produced. It is expected that the main effects of iceberg transport will stem from the direct generation of a localized plume of air, and lowered water temperature which will probably result in a microenvironment which will lure an accompanying biological population that is normally foreign to the surrounding microenvironment. There will also be significant littering of some global sea lanes with hazardous glacial debris. At the iceberg's destination, the nature of the impact will depend greatly on the proximity of the coast. Oceanographically, a seafloor-parked berg will induce thermodynamic effects, upwelling, which will have an impact on the biological population, and abrasion of the seafloor. Recommendations for further studies of the impact of iceberg towing are outlined.

F-20490

Jenior, M.M., **Energy conservation, management, water quality, legal and socio-political aspects of iceberg utilization,** International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977. Proceedings. Edited by A.A. Husseiny, New York, Pergamon Press, 1978, p.617-720.

DLC TD353.I53 1977

Workshop panel considerations are presented on issues associated with iceberg utilization, the possible effects of iceberg utilization on society and its environment, and ways to facilitate iceberg utilization in light of these effects. The discussions focused on 1) issues associated with the identification, selection and transportation of icebergs, 2) issues associated with the development of shore facilities and the distribution and use of the water, 3) factors common to both sets of issues, and 4) the relationship of iceberg utilization to energy conservation. Five recommendations emerged from the panel's discussions of the non-technical factors associated with iceberg utilization. The territorial sovereignty of Antarctica and its waters, and the use and ownership of its resources were discussed in 1).

F-20505

Delmas, R., Boutron, C., **Sulfate in antarctic snow: spatio-temporal distribution,** *Atmospheric environment,* 1978 12(1-3), p.723-728, 23 refs.

Sulfate content measurements are reported for eighty snow samples collected in East Antarctica. Stringent contamination free techniques were used both for sampling and analysis. Sulfate concentrations do not show large variations along a 1100km coast interior axis, if a narrow coastal area is excepted. The analysis of well dated snow samples (time range: 1950-1975) collected at South Pole Station and Dome C suggest a main marine contribution for the sulfate contents, to which are added sporadic stratospheric injections linked with major volcanic events, such as Mt. Agung (1963), whose eruption is clearly recorded. There is no evident anthropogenic contribution to the measured values. (Auth. mod.)

F-20521

U.S. Navy. Fleet Weather Facility, **Antarctic ice charts 1975-76,** Suitland, Maryland, [1977], 434p.

The advent of high resolution satellite imagery combined with the ground truth of conventional observations has only recently provided description of the polar ice fields on a semi-synoptic scale. Since 1970, the fleet weather facility has prepared operational analyses of sea ice conditions in the Antarctic. The charts were constructed by Navy ice analysts under operational time constraints from satellite imagery and conventional data. Reanalysis with late data was not normally attempted; rather, the current analysis was prepared, incorporating this to the extent possible. The analysis was compared with available climatology in an attempt to eliminate gross errors.

F-20571

Holdsworth, G., Glynn, J., **Iceberg calving from floating glaciers by a vibrating mechanism,** *Nature,* Aug. 3, 1978 274(5670), p.464-466, 18 refs.

Observations of antarctic super tabular icebergs have shown that their origin can frequently be traced to previously existing super ice tongues, which are a class of massive seawards-extending ice shelves. A mechanism for generating significant bending stresses at locations along an ice tongue far from the grounding zone is, by vibration of the glacier, in a mode higher than the fundamental. In this report, an approximate analysis of the modes of free vibration of a buoyant, elastic, tapering ice tongue floating in shallow water of variable depth is outlined. It is suggested that the proposed vibration mechanism, although normally giving rise to weak bending stresses, may, under high incident wave energy, cause calving.

F-20572

Whillans, I.M., **Inland ice sheet thinning due to Holocene warmth,** *Science,* Sep. 15, 1978 201(4360), p.1014-1016, 13 refs.

The climatic warming of 10,000 years ago is now affecting the central portions of ice sheets, causing ice-flow acceleration. This process explains the present-day thinning of the ice sheet in West Antarctica. Former ice sheets must have also responded to climatic warming with a delay of thousands of years. This lag in response is important in the climatic interpretation of glacial deposits and of changes in ice volume obtained from deep-sea cores. (Auth. mod.)

F-20599

Cragin, J.H., Herron, M., Langway, C.C., Jr., **Chemistry of 700 years of precipitation at Dye 3, Greenland,** *U.S. Army Cold Regions Research and Engineering Laboratory,* July 1975 RR 341, 18p., 30 refs.

Concentrations of sodium, potassium, magnesium, calcium, silicon, aluminum, lead and sulfate were measured in surface snow and

in individual annual accumulation layers from a 373-m-deep ice core from Dye 3, Greenland, covering the time period from 1232 to 1971 A.D. Average background (pre-1840) concentrations in micrograms/liter are given. Deviations are due mainly to the variability of the concentrations in the samples deposited over the stated time interval rather than analytical precision. Observed concentrations of sodium, potassium, magnesium, calcium, silicon and aluminum can be adequately explained by relative abundances of these elements in seawater and terrestrial dust. Data on the elemental composition of Camp Century and Byrd Station firn samples are compared.

F-20603

Oeschger, H., **Ar-39 dating of groundwater,** Symposium on Isotope Techniques in Groundwater Hydrology, Vienna, March 11-15, 1974. Proceedings, Vol.2, Vienna, International Atomic Energy Agency, 1974, p.179-190, 8 refs.

Basic information for demonstrating the feasibility of the Ar-39 method is given. The method was first successfully checked by measuring Ar extracted from ice at Dye 3 (Greenland) in 1971 and at Byrd Station (Antarctica) in 1969-70 and 1971-72. The Ar-39 ages obtained correspond well with those determined by O-18/O-16, C-14, and Si-32 analyses. The application of this method, together with Kr-85 H-3 and C-14 measurements on groundwater, has great value in isotope hydrology. A system which allows the extraction of the gases from 20 tons of water in about one day has been developed, and preliminary details of experiences with it are given.

F-20604

Miller, K.J., Chiang, E., **Design and operation of the ice core data bank,** June 11, 1976, 28p., Unpublished manuscript. 2 refs.

The Ice Core Laboratory (ICL) of the Department of Geological Sciences, State University of New York at Buffalo (SUNYAB), has developed an information storage and retrieval system for ice core data obtained from the Greenland Ice Sheet Program (GISP) and the Ross Ice Shelf Project (RISP) field and laboratory studies. This system was developed to provide a rapid review of up-to-date fundamental measurements for each ice core that is acquired, stored and sampled at ICL/SUNYAB, and to make copies of these data available for distribution to all interested investigators. It is the purpose of this report to describe the ice core data bank program and the operational procedures for operators at the SUNYAB computer facilities. (Auth.)

F-20615

Aver'ianov, V.G., **Long-term accumulation characteristics at Vostok Station, Antarctica** [Mnogoletnie kharakteristiki akkumuliatsii na stantsii Vostok, Antarktida], *Problemy Arktiki i Antarktiki,* 1978 No.54, p.93-99, In Russian. 13 refs.

Twenty-year snow gage, stratigraphic and radioisotope data on snow accumulation at Vostok are analyzed. The most reliable snow gage measurement indicates a rate of 2.2 g/sq cm/yr. A temporary variability in accumulation, from 14 to 88%, depends on the length of the study period. Accumulation changes are correlated to changes in precipitation, which indicates the essential role of atmospheric circulation in accounting for fluctuations in moisture input.

F-20616

Popov, I.K., Rosliakov, V.N., Bogorodskiĭ, P.V., **Using side-looking radar for studying ice undersurfaces** [Ispol'zovanie gidrolokatora bokovogo obzora dlia issledovaniia podvodnykh poverkhnosteĭ], *Problemy Arktiki i Antarktiki,* 1978 No.54, p.88-92, In Russian. 2 refs.

Described herein is a technique by which side-looking radar can be used to explore the undersurface of ice shelves, floating ice and icebergs. The method, successfully practiced during the 24th voyage of the research vessel *Professor Vize,* is essentially similar to that used to define the ocean bottom.

F-20648

Lutsenko, E.I., **Features of summer ice processes in the Pacific sector of Antarctica** [Ob osobennostiakh ledovykh protsessov v tikhookeanskom sektore Antarktiki letom], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1978 Vol.345, p.133-137, In Russian. 7 refs.

Summer sea ice dynamics in the Pacific sector are analyzed and compared with those in the eastern sector. The author concludes that, compared to East Antarctic ice, the Pacific pack is a more intact and cohesive mass with extensive polynyas inside the pack. The polynyas at the divergence, characteristic of East Antarctica, are not found in the Pacific Ocean. The dynamics of the northern edge of the Pacific pack are less pronounced. Polynyas play a large role in sea ice destruction.

F-20651

Sanderson, T.J.O, **Thermal stresses near the surface of a glacier,** *Journal of glaciology,* 1978 20(83), p.257-283, In English with French and German summaries. 47 refs.

Stresses occur in the uppermost 10 m of a glacier as a result of temperature fluctuations at the surface. A model is set up of a typical year's surface temperature variation, and the progress of temperature waves through the glacier is calculated using Fourier theory of heat conduction. Short-period fluctuations are rapidly attenuated, and at 10 m depth the annual cycle is reduced to 5% of its surface amplitude. As the temperature of the ice varies it undergoes small volume changes; stresses are calculated on the assumption that any tendency of the ice to expand or contract laterally results in the creation of just enough stress to cause the ice to remain unstrained. It is found that in the top 2 or 3 m stresses of thermal origin are generally in excess of those due to gross deformation or overburden pressure. Cracks of thermal origin may be responsible for the initial formation of crevasses, and they also provide an explanation for background noise encountered when seismic shooting at low temperatures. Calculations are made of the strain-rate field surrounding a crack, and it is found that thermal effects can lead to appreciable strain-rate anomalies for strain-rate measurements near cracks. The magnitude of the effect is easily sufficient to account for anomalous fluctuating strain-rates found by workers using wire strainmeters on the Barnes Ice Cap. (Auth. mod.)

F-20652

Whillans, I.M., **Surface mass-balance variability near "Byrd" Station, Antarctica, and its importance to ice core stratigraphy,** *Journal of glaciology,* 1978 20(83), p.301-310, In English with French and German summaries. 22 refs.

The local variability in surface mass balance (net snow accumulation) up-glacier from Byrd Station, Antarctica, is due to the combined effects of year-to-year "climate" variations and of the surface microrelief due to snow drifts and sastrugi. These variabilities are consistent with the variability in surface mass balance obtained from core stratigraphy, and are used in a discussion of the difficulties encountered with the deep Byrd Station core in detecting annual layering by the stable oxygen-isotope ratio and the microparticle concentration techniques. The recognition of annual layers by these techniques requires that the snows of certain seasons be present in the measured section, but near Byrd Station the microrelief is such that summer snow layers are not horizontally continuous and may be absent from a given section. At other sites on ice sheets, where the microrelief is less (less wind activity) or where the surface mass balance is larger,

or both, less difficulty is anticipated in using the stable oxygen-isotope ratio and micro-particle-concentration techniques to identify annual layers. (Auth.)

F-20654

Bogorodskiĭ, A.V., Popov, I.K., **Instruments for studying underwater portions of Southern Ocean icebergs** [Instrumental'nye issledovaniia podvodnykh chasteĭ aĭsbergov IUzhnogo okeana], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1978 Vol.359, p.134-138, In Russian. 1 ref.

For the first time side-looking radar has been successfully used to study the underside of Southern Ocean icebergs. The results of studies into extent of immersion of medium-sized glaciers are analyzed.

F-20668

Andrieux, P., **Electrical sounding methods applied to ice and glacier research. Results from 1962 to 1965** [Les méthodes électriques de prospection appliquées a l'étude de la glace et des glaciers. Résultats obtenus de 1962 à 1965], *Comité national français des recherches antarctiques. CNFRA*, 1970 No.24, 64p., In French. Refs. p.57-59.

General considerations in electrical prospecting of ice and glaciers are discussed first. Then the results of field studies in Switzerland, the Kerguelen Islands, Greenland, Baffin, Axel Heiberg and Meighen Islands are reported. The second portion of the monograph is concerned with the electrical properties of ice, both that prepared in the laboratory and that found in glaciers in both temperate and polar regions.

F-20673

Aver'ianov, V.G., Korotkevich, E.S., Kotliakov, V.M., **Antarctic glaciation and its role in world water regime and climate formation** [Oledenenie Antarktiki i ego rol' v formirovanii klimata i vodnogo rezhima Zemli (problemy gliatsiologicheskikh issledovaniĭ)], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten'*, 1978 No.97, p.6-14, In Russian. 12 refs.

The history of antarctic glaciation is reviewed and its role in global climatology discussed in order to define the primary research problems and point the way to their resolution. The two major scientific puzzles in antarctic glaciology are the energy exchange between the ice sheet and the atmosphere and ocean, and the water budget of the ice sheet and its possible exploitation for human use. A deeper understanding of paleoclimatology would provide a foundation for long-range weather forecasting and for the evolution of a theory of global climate formation. From a practical viewpoint the goals to be reached in the near future are 1) development of a conservation policy and attendant practices, 2) improved engineering on the ice (construction techniques, for example) and 3) improved drilling techniques to achieve deeper shafts for both glaciological and minerological purposes. The expected contributions of the International Antarctic Glaciological Program are outlined.

F-20679

Bogorodskiĭ, V.V., Trepov, G.V., **Studying the antarctic ice sheet by radio-echo sounding** [Issledovanie lednikovogo pokrova Antarktidy metodami radiolokatsionnogo zondirovaniia], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten'*, 1978 No.97, p.104-123, In Russian. 19 refs.

Studies on the thickness, flow rate, mass balance, and other parameters of the antarctic ice sheet and individual glaciers are reviewed. Also the equipment used is described and its general specifications are given. Results are summarized in charts and further research plans outlined.

F-20681

Korotkevich, E.S., **Results of ice sheet vertical structure studies in the Vostok Station area** [Rezul'taty izucheniia vertikal'noĭ struktury lednikovogo pokrova Antarktidy v raĭone stantsii Vostok], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten'*, 1978 No.97, p.135-148, In Russian. 7 refs.

Core studies carried out near Vostok Station are discussed. First, attention is paid to various features of the core itself—deformation of the walls, temperature, etc. The characteristics of the ice are then discussed: density, texture, optical orientation of the crystals, chemical composition, isotope composition, air inclusions, and micropaleontological analysis.

F-20700

Parkinson, C.L., **Numerical simulation of the annual cycle of sea ice in the Arctic and Antarctic,** NCAR cooperative thesis No.46, Columbus, Ohio State University, 1978, 191p., Ph.D thesis. Refs. p.179-191.

This work describes the construction of and results from a numerical model simulating the yearly cycle of sea ice in both the northern and southern hemispheres. The model employs a rectangular grid with 200 km horizontal resolution, an 8 hr timestep, and four vertical layers—ice, snow, ocean, and atmosphere. Both thermodynamic and dynamic processes are incorporated, the thermodynamics being based on energy balances at the various interfaces and the dynamics being based on the following five stresses: wind stress, water stress, Coriolis force, internal ice resistance, and the stress from the tilt of the sea surface. The model simulates a reasonable yearly cycle of sea ice thickness and extent in both the Arctic and Antarctic. The Antarctic ice grows from a minimum in March to a maximum in late August, while the Arctic ice expands from a September minimum to a March maximum. Overall, both thicknesses and concentrations are greater in the Arctic than in the Antarctic. Maps are presented of modeled thicknesses, concentrations, and velocities, and surface energy budgets are analyzed. (Auth.)

F-20704

Doake, C.S.M., **Dissipation of tidal energy by antarctic ice shelves,** *Nature*, Sep. 28, 1978 275(5678), 304-305, 17 refs.

The possibility of tidal bending of antarctic ice shelves is examined. Using equations derived by Holdsworth (1977; 31-4440 or F-18701) for surface bending stress, average strain rate and exponential damping factor, the dissipation rate for tidal bending of antarctic ice shelves is estimated to be 2.0 x 10 exp 12 W. The uncertainties associated with this figure are discussed. Within the constraints imposed by the lack of data, it is suggested that extensive glaciation occurs in the periods preceding "turning points", when the Earth increases its spin velocity.

F-20705

Donaldson, P.B., **Melting of antarctic icebergs,** *Nature*, Sep. 28, 1978 275(5678), p.305-306, 13 refs.

This note reports some initial studies of iceberg melting relevant to towing proposals. If under-sea melting is an important ablation mechanism, then one or more of the following three effects might be detectable. (1) The lighter freshwater could rise up the sides of the iceberg with little mixing to produce a pool of less saline water. If this happens, then it would be possible for meltwater to be collected in warm waters by building a shallow pen around the iceberg. (2) The lighter freshwater may entrain warmer, saltier water from the surrounding sea and thus be responsible for considerable vertical transport of deep water and nutrients. (3) Melting could occur in a strati-

fied manner and the freshwater may then disseminate in layers. Thus evidence of gross salinity variation near an iceberg would support mechanism (1), and a temperature rise would support mechanism (2). To test for these two mechanisms, salinities were measured around three icebergs in the northern Ross Sea/Southern Ocean. Mechanism (3), suggested only recently, was not tested. No variation of salinity with distance from icebergs was found. A temperature inversion at a depth of 50-60 m around iceberg no. 3 was recorded, but this extended for at least 2 km. It is suggested that calving is probably the most important ablation mechanism in both northern and southern waters.

F-20711

Australia may benefit as iceberg idea is refloated, *World water,* June 1978, p.32-34.

This discussion focuses on various aspects of the studies being conducted by Iceberg Transport International (ITI) chaired by Prince Faisal of Saudi Arabia, on the feasibility of towing antarctic icebergs. ITI has earmarked Bouvet I. and Australia's Heard I. as pick-up fields for tabular icebergs. An estimated 3-mo journey would bring them to the Australian coast where the best reception sites discovered so far —determined by depressions in the continental shelf sufficient to allow passage of the bergs' huge draught—are 35 km from Robe in South Australia and Rottnest I. in Western Australia. Further surveying will determine the feasibility of other sites. Proposed methods for locating and insulating icebergs, and delivering the water to shore are outlined. The utilization of iceberg water to fill oil tankers returning to Saudi Arabia from South African ports is briefly considered, as are the legal, ecological, and economic aspects of iceberg transport.

F-20713

Dodson, R.H.T., **Icebergs to Arabia,** *Focus,* Sep.-Oct. 1978 29(1), p.10-16, 5 refs.

The prospect of transporting icebergs from Antarctica as a means of relieving the world's fresh water shortage is examined. Iceberg supply, towing methods, towing dynamics, the problem of insulation, the potential of icebergs for generating electric power, and the economics of such a venture are discussed. Prince Mohammed al-Faisal of Saudi Arabia is committed to backing the necessary research, and is dedicated to the idea that iceberg water can be practical, not only for the Middle East but for Australia, California, Chile and other developing countries as well. Prince Faisal has formed a group called Iceberg Technology International, headquartered in Paris, to pursue his goal.

F-20722

Kozlovskiĭ, A.M., **Characteristics of Antarctic coastal pack ice formation** [Nekotorye osobennosti obrazovaniia i formirovaniia mnogoletnego pripaia u poberezh'ia Antarktidy], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten',* 1978 No.98, p.35-42, In Russian. 8 refs.

First-year ice is compared with multi-year pack ice in terms of its formation, crystal structure, thickness, salinity, density, and other features. It appears that in nearly all respects, they differ, older pack ice sharing its characteristics with shelf ice, whose formation and conditions it resembles more than it does the formation and physical characteristics of first-year pack.

F-20723

Nazintsev, IU.L., **Salt and phase composition of pack ice during growth and destruction** [Solevoĭ i fazovyĭ sostav pripaĭnogo l'da v protsesse ego rosta i razrusheniia], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten',* 1978 No.98, p.43-48, In Russian. 5 refs.

Monthly changes in salinity of pack ice around Molodezhnaya Station were monitored and trends in salt migration through the ice were measured. Salt concentration in congelation-type forming ice in the Alasheyev Bight is shown in a chart. Vertical salt concentration is also presented.

F-20724

Korotkevich, E.S., Savatiugin, L.M., Morev, V.A., **Drilling through shelf ice near Novolazarevskaya Station** [Skvoznoe burenie shel'fovogo lednika v raĭone stantsii Novolazarevskoĭ], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten',* 1978 No.98, p.49-52, In Russian.

Two cores were drilled through the Lazarev ice shelf and ice temperature, texture and other parameters studied. The ice shelf at these two points was 370 and 374 m thick, respectively, and the ice was determined to be of continental origin, an outgrowth of the glacier and not a result of bottom freezing.

F-20725

Dmitriev, D.N., Vostretsov, R.N., Petukhov, I.A., **Deformation of the sides of a deep borehole in the antarctic ice cover at Vostok Station** [Deformatsiia stenok glubokoĭ skvazhiny v antarkticheskom lednikovom pokrove na stantsii Vostok], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten',* 1978 No.98, p.53-57, In Russian. 5 refs.

Measurements were taken at intervals up until more than one year after drilling of deep (500-900m) boreholes in the antarctic ice sheet to determine the extent of side deformation. The results are set forth in graphs.

F-20726

Kudriashov, B.B., Abyzov, S.S., Bobin, N.E., **Selecting drills for microbiological studies of deep glacier layers at Vostok Station** [Otbor prob dlia mikrobiologicheskikh issledovaniĭ glubokikh gorizontov lednikovoĭ tolshchi na stantsii Vostok], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten',* 1978 No.98, p.58-62, In Russian. 2 refs.

The technical problems of selecting and preparing drills for deep microbiological boring of the ice sheet are discussed. Maintaining sterility of equipment, surrounding snow and samples requires constant vigilance. 720 samples were taken and preliminary analysis reveals the presence of microbes.

F-20727

Barkov, N.I., Lipenkov, V.IA., **Snow accumulation from 1970 to 1973 around Vostok Station** [Nakoplenie snega v raĭone stantsii Vostok v 1970-1973 gg.], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten',* 1978 No.98, p.63-68, In Russian. 5 refs.

Snow accumulation data was measured at Vostok over a four-year period. It is analyzed here and the results shown in charts and graphs. Statistical analysis suggests that such small-scale observations cannot be used for describing monthly and yearly averages, but are useful for computing long-term means.

F-20732

Vallon, M., **Bedrock topography of Ampère Glacier (Kerguelen Islands, T.A.A.F.)** [Topographie sous-glaciaire du Glacier Ampère (Iles Kerguelen, T.A.A.F.)], *Zeitschrift für Gletscherkunde und Glazialgeologie,* 1977 (Pub. 1978) 13(1/2), p.37-55, In French with English and German summaries. 15 refs.

A seismic reflection survey with a TRIO SX 12, a seismic refraction equipment for civil engineering, gives the topography of the bedrock under 100 to 650 m of Ampère Glacier, Kerguelen Is. With geophones placed in an hexagonal pattern, each shot gives 2 independent reflecting elements. A simple method to calculate errors on each of the 3 coordinates of each mirrorpoint is given. The velocity of P-wave is 3730 m/s parallel to the surface of the glacier, a little faster for an angle of incidence of 45 deg, a little slower for the other orientations. There is no intermediate layer between the ice and the bedrock. Depths reach 200 m under sea level at 6 km of the snout.

F-20733

Vallon, M., **Mass balance and recent fluctuations of Ampère Glacier (Kerguelen Islands, T.A.A.F.)** [Bilan de masse et fluctuations récentes du Glacier Ampère (Iles Kerguelen, T.A.A.F.)], *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1977 (Pub. 1978) 13(1/2), p.57-85, In French with English and German summary. 38 refs.

From 1970 to 1974 the equilibrium line of Ampère Glacier, Kerguelen Is., was near 700 m a.s.l., the ablation gradient being 0.02 m w.e./m. During these four years the tongue had been thinning from 2 to 5 m each year. From 1962 to 1974 the snout receded about 25 to 50 m each year, and it is possible that the recession had been going on since 1910. In the accumulation area, between 450 and 1050 m a.s.l., the mean balance is 1.9 m of ice/year.

F-20734

Poggi, A., **Comparison of energy balance measurements at two stations on the Ampère Glacier (Kerguelen Islands)** [Etude comparative du bilan thermique en deux stations du Glacier Ampère (Iles Kerguelen)], *Zeitschrift für Gletscherkunde und Glazialgeologie*, 1977 (Pub. 1978) 13(1/2), p.87-97, In French with English and German summaries. 12 refs.

This paper presents the results of energy balance studies of two stations at Ampère Glacier, Kerguelen Is. Linear regressions have been established for the data of the two stations (temperature, vapor pressure, their vertical gradients, net radiation and friction velocity). The wind profiles of the lowest 4 m become logarithmic if a certain displacement height of the instruments is allowed for. The values of friction velocity are closely dependent on this displacement height and on wind direction. Energy fluxes are expressed in terms of wind speed, temperatures and vapor pressure at one level.

F-20736

Leont'ev, E.B., Komova, V.V., **Ice conditions encountered by the d/e *Ob'* (1972/73)** [Ledovye usloviia plavaniia d/e *Ob'* (1972/73 g.)], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1978 Vol.68, p.71-78, In Russian.

A detailed description of ice conditions along approaches to Mirnyy, Molodezhnaya, and Leningradskaya Stations and to the construction site of the new Soviet station in March and April 1973, as well as of drift conditions encountered by the *Ob'* is given. It is based on data from aerial reconnaissance, satellites and visual observations.

F-20737

Denisov, A.S., **Ice conditions encountered by the research vessel *Professor Zubov* (Dec. 1972-Mar. 1973)** [Ledovye usloviia plavaniia nauchno-issledovatel'skogo sudna *Professor Zubov* (dekabr' 1972 g.—mart 1973 g.)], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1978 Vol.68, p.79-86, In Russian. 12 refs.

Ice conditions encountered by the *Professor Zubov* are described for the following routes: Montevideo-Bellingshausen-Molodezhnaya-Freemantle; Freemantle-Mirnyy-Kerguelen; Freemantle-Mirnyy-Amery camp; Amery camp-Molodezhnaya-Africa. Several conclusions on iceberg and pack distribution are drawn from the data.

F-20738

Romanov, A.A., **Features of the formation of the Balleny ice massif and drift of the *Ob'*** [Nekotorye zakonomernosti formirovaniia Ballenskogo ledianogo massiva i dreĭf d/e *Ob'*], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1978 Vol.68, p.87-95, In Russian. 6 refs.

The *Ob'* was icebound from Apr. 23 until July 22, 1972, near the Balleny Islands and forced to drift in the area of the so-called Balleny Ice Massif. She drifted altogether 564 miles at a rate of 0.26 knots. Added to other available data, the observations resulting from this situation allowed several conclusions to be drawn about ice formation in the region. The best time to approach Leningradskaya Station is late January or February. The route should be chosen based on the current position of the Balleny Massif.

F-20743

Ivanov, I.P., **Movement of the ice sheet around Mirnyy Station** [O dvizhenii lednikovogo pokrova v raĭone stantsii Mirnyĭ], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1978 Vol.68, p.113-114, In Russian. 3 refs.

The Doppler-effect method using lasers was employed to study flow and deformation of the ice cover around Mirnyy Station. At more than 20 points, average hourly, average per-minute and momentary flow rates were recorded and the nature of glacier movement in the Vetrov Hill area was analyzed. Average hourly rates range from 0.0 to 1.2 microns/sec.

F-20744

Ivanov, I.P., Firsov, N.T., Chudakov, V.I., **Antarctic ice sheet deformation** [K voprosu o deformatsii antarkticheskogo lednikovogo pokrova], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1978 Vol.68, p.115-116, In Russian.

Ice sheet deformation was studied in locations along a Mirnyy-Vostok traverse. In areas with many crevasses glacier deformation resembles the virbation of springs with amplitudes of 3-10 microns on a 10 m base. Maximum deformation in crevasse free areas does not exceed 0.4 microns.

F-20745

Trepov, G.V., **Studies of antarctic glacier structure** [Rezul'taty issledovaniia stroeniia antarkticheskogo lednika], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1978 Vol.68, p.117-121, In Russian.

Radio echo sounding of the antarctic ice sheet in the Hays Glacier region permitted study of the internal structure of the glacier and the diagramming of the glacier bed.

F-20746

Burtsev, I.U.A., **Geomagnetic measurement within a glaciological polygon** [Geomagnitnye izmereniia na gliatsiologicheskom poligone], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1978 Vol.68, p.122-124, In Russian.

The 18th Soviet Antarctic Expedition marked the beginning of a magnetic study of glacier flow velocity and direction. A geomagnetic polygon was laid out 353 km from Mirnyy on the route to Vostok and was defined by the right-angle intersection of two traverse routes. The chosen area is suitable for study but in order to improve the accuracy of this method, the cross-shaped polygon should be replaced by a right-angle network of traverse routes.

F-20747
Chudakov, V.I., **Radio echo soundings within glaciological polygons** [Rezul'taty radiolokatsionnoĭ s"emki na gliatsiologicheskikh poligonakh], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1978 Vol.68, p.125-129, In Russian.

In 1973 a glaciological field party measured glacier thickness along the Mirnyy-Vostok traverse and completed barometric leveling of its surface as far as the 357th km. A second area survey was done in polygon No.2, where the glacier thickness ranges from 1810 to 2550m, whereas in No.3 it goes from 1630 to 2670m. Surface height is 1810m in No.2 and 2860m in No.3.

F-20749
Kudishkin, V.S., Kosenko, N.G., **Interaction of the hull of the *Ob'* with compressed ice** [Osobennosti vzaimodeĭstviia korpusa d/e *Ob'* so l'dom pri szhatiiakh], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1978 Vol.68, p.133-139, In Russian. 2 refs.

The *Ob'* sustained extensive damage to parts of her hull when she was icebound for 90 days off the Oates Coast. The authors analyze the stress to which she was subject from floating ice, various wind and other weather conditions, and during her entrapment.

F-20751
O'Lenic, E.A., **U.S. Navy global ice analysis and forecasting,** *Glaciological data*, 1978 GD-2, p.43-46, 11 refs.

Since 1972 the U.S. Fleet Weather Facility Ice Operations Department has produced global sea ice analyses and forecasts on a year-round basis. The data summarized in these analyses provide useful information for planning Antarctic operations. The products and some applications are: 1. detailed "tailored" analyses and forecasts for close support of ships in the polar pack; 2. routine weekly analyses which indicate the existing trends in ice growth or recession. These also serve as bases for long-range forecasts and climatological summaries; 3. 15- and 30-day forecasts, used to update seasonal forecasts; and 4. seasonal outlook in the Ross Sea, indicating the expected rates and patterns of breakup and the expected dates for safe transit to McMurdo or the Ross Ice Shelf. (Auth.)

F-20762
Eskin, L.I., **Dynamics of the Balleny ice ridge** [Dinamika l'dov Ballenskogo ledovogo massiva], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1978 Vol.67, p.35-40, In Russian. 5 refs.

Features of sea ice drift resulting from constant currents and wind are determined using ice observations from ships, satellite information, and data from ships icebound in the Somov Sea. The stability of the western boundary of the ridge and the wide fluctuations in the location of ice edges on the north and east sides are discussed. In addition to the previously known cyclonic circulation of ice in the northeast part of the ridge, there was also noted an anticyclonic circulation in the southeast, which is bounded by the Ninnis Glacier on the west.

F-20763
Eskin, L.I., **Ice conditions in the Leningradskaya Station area** [Ledovye usloviia v raĭone stantsii Leningradskoĭ], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1978 Vol.67, p.41-49, In Russian.

A description of ice conditions around Leningradskaya in 1973 using coastal observations of the pack (ice thickness, snow density and depth) is given. Pack here may not break up for several years running, partly because of large numbers of locally formed grounded icebergs. A year-round polynya lies beyond the pack to the north and northeast of the station.

F-20765
Sen'ko, P.K., **Snow accumulation around Molodezhnaya Station** [Snegonakoplenie v raĭone stantsii Molodezhnoĭ], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1978 Vol.67, p.55-57, In Russian.

Snow accumulation observations were carried out along three profiles (azimuth around 140 deg) on the continental ice 8-12 km from Molodezhnaya from May 1973 until Feb. 1974. Snow depth increase occurred primarily in June and July. In November, December and January there was a decrease. Snow depth reached 50 cm in low areas of the southeastern portion of the profiles.

F-20772
Sytinskiĭ, A.D., Shel'piakov, B.A., Oborina, S.F., **Results of seismic observations of dynamic glacier processes at Mirnyy** [Nekotorye rezul'taty seĭsmicheskikh nabliudeniĭ za lednikovymi dinamicheskimi protsessami v Mirnom], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1978 Vol.67, p.93-96, In Russian. 4 refs.

During the 18th SAE several hydrometeorological conditions were analyzed to determine their effect on snowquakes recorded at the seismic station at Mirnyy. Such quakes occur because of dynamic glacier processes. At Mirnyy, as opposed to Novolazarevskaya, seismic glacier activity is related to season. This relation is caused by hydrometeorological conditions, to some extent by the presence of fresh water near the ice barrier, wind and sea swell. There is no indication that local wind speed affects glacier dynamics.

F-20782
Bentley, C.R., Acharya, H.K., **Investigations of seismic wave propagation in anisotropic and inhomogeneous media,** Madison, University of Wisconsin, Middleton Geophysical and Polar Research Center, 1974, 3p. AD-781 600.

The purpose of this study was to investigate some of the effects of anisotropy and inhomogeneity on the propagation seismic waves by theoretical analysis and comparison with seismograms from the antarctic ice sheet. Four specific topics are considered: (1) reflection coefficients at an isotropic-anisotropic boundary, (2) surface wave propagation in the presence of a strong velocity gradient, (3) conversion between body wave types upon total internal reflection, that is at the turning point of a refracted arrival, and (4) the continuous bodily conversion of P waves into shear waves in the course of propagation through a strong velocity gradient.

F-20788
Browning, J.A., **Why bother with Antarctica,** *Thayer School of Engineering. The Year*, Oct. 1978 6(1), p.27-29.

The author discusses his activities in the Antarctic with an engineering firm assigned to drill an access hole of 1-ft min diam at Site J9 on the Ross Ice Shelf. Drilling was accomplished with a flame drill, with two diesel-powered compressors, thousands of feet of multiple hose lengths, hydraulic systems and various pumps. The flame drill, normally used for rock drilling, was successfully tested on ice in Alaska. Drilling operations at the J9 site proved to be satisfactory; however, it is recommended that the drill not be used for deep drilling in ice (beyond 3,000 ft.) Use of a hot water jet system, to be tested in the coming season, is suggested.

F-20801
Chang, A.T.C., **Estimation of snow temperature and mean crystal radius from remote multispectral passive microwave measurements,** *U.S. National Aeronautics and Space Administration. Technical paper,* June 1978 NASA-TP-1251, 13p., 10 refs.

A statistical retrieval method has been developed in this paper to determine the snowfield temperature profile and mean crystal size by using the Scanning Multifrequency Microwave Radiometer (SMMR) on board a spacecraft. The estimated errors for retrieval are approximately 1.5 K for temperature and 0.001 cm for crystal radius in the presence of 1 K rms noise for each SMMR channel. (Auth. mod.)

F-20806
Miagkov, S.M., **Effect of antarctic glaciation on global climate** [Global'noe klimaticheskoe vliianie oledeneniia Antarktidy], *Moscow. Universitet. Vestnik. Seriia 5 Geografiia,* July-Aug. 1978 No.4, p.110-113, In Russian with English summary. 15 refs.

The factual data available indicate that the mantle glaciation of the antarctic continent was formed in the Paleogene-Neogene borderline period without a direct influence of any extra-terrestrial causes, but only as a result of tectonic processes. This glaciation was, in turn, the main, if not the only, cause of a global change of climate in Cenozoic, which was crowned by a series of middle-latitude continental glaciations in the Northern hemisphere. This will recur as long as the Antarctic glaciation exists. It is possible that the very periodicity of the glacial and interglacial periods of the Northern hemisphere has been governed by some events in the Antarctic Region. However, this relationship is not yet sufficiently clear and deserves further study for the purpose of forecasting a new glaciation of Eurasia and North America. (Auth.)

F-20824
Sato, T., Hannuki, T., **Flow-visualization by means of soap bubbles on snowdrift around the huts at Syowa Station,** *Antarctic record,* Sep. 1978 No.62, p.1-22, In Japanese with English summary. 17 refs.

Wind tunnel tests were conducted in order to predict profiles of snowdrift around buildings at Showa Station. Assuming that snowflakes in wind velocity fields exceeding the mean wind velocity flow along with the wind, and snowflakes in those fields not exceeding it tend to accumulate on the ground surface, the profiles of the snowdrift around the buildings can be predicted. The results of wind tunnel tests are as follows. (1) The profile of the snowdrift changes according to the surface friction velocity of the surface boundary layer and the altitude of the pilotis. (2) The profile of the snowdrift can be predicted in the division of the wind velocity field at the altitude Z. (3) The variation of the snowdrift profile can also be expressed by the index K of the fluid energy of the mean wind. (Auth. mod.)

F-20845
Raynaud, D., **Gas inclusions in glacier ice; their use as indicators of formation site in polar ice; climatological and rheological applications** [Les inclusions gazeuses dans la glace de glacier; leur utilisation comme indicateur du site de formation de la glace polaire; applications climatiques et rhéologiques], *France. Centre national de la recherche scientifique. Laboratoire de glaciologie. Publication,* May 20, 1976 No.214, 110p., Ph.D. thesis. In French. Numerous refs. p.97-104.

A study was carried out on 100 ice samples taken from sites in Antarctica and Greenland to determine gas inclusions. Gas inclusions are then related to geographic location and to climatic vs. rheological effects.

F-20857
Thomas, R.H., Bentley, C.R., **Model for Holocene retreat of the West Antarctic Ice Sheet,** *Quaternary research,* 1978 10(2), p.150-170, 36 refs.

Equations are derived that can be used to make a quantitative estimate of the maximum size of a marine ice sheet and of when and how rapidly retreat would take place under prescribed conditions. Ice sheet growth is favored by falling sea level and uplift of the seabed. In most cases the buttressing effect of a partially grounded ice shelf is a prerequisite for maximum growth out to the edge of the continental shelf. Collapse is triggered most easily by eustatic rise in sea level, but it is possible that the ice sheet may self-destruct by depressing the edge of the continental shelf so that sea depth is increased at the equilibrium grounding line. Application of the equations to a hypothetical "Ross Ice Sheet" that 18,000 yr ago may have covered the present-day Ross Ice Shelf indicates that, if the ice sheet existed, it probably extended to a line of sills parallel to the edge of the Ross Sea continental shelf. By allowing world sea level to rise from its late-Wisconsin minimum it was possible to calculate retreat rates for individual ice streams that drained the "Ross Ice Sheet". If ice shelves did not form during retreat then the analysis indicates that most of the West Antarctic Ice Sheet would have collapsed by 9000 yr B.P. Thus, the present-day Ross Ice Shelf (and probably the Ronne Ice Shelf) serves to stabilize the West Antarctic Ice Sheet which would collapse very rapidly if the ice shelves were removed. Rebound of the seabed after the ice sheet had retreated to an equilibrium position would allow the ice sheet to advance once more. (Auth. mod.)

F-20865
Kohnen, H., **Earth science investigations on the sixth continent** [Über die geowissenschaftlichen Forschungen auf dem sechsten Kontinent], *Erde,* 1978 109(2), p.153-187, In German with English summary. Refs. p.184-187.

The present article reviews characteristic features of the physical nature of Antarctica and outlines relevant scientific results. The discussion is, however, confined to geosciences. The progress of mapping is discussed and the essential results of tectonic and geological research, as well as investigations of the earth's crust, are reported. Much effort is devoted to the ice, which is the most widespread mineral in Antarctica, covering 98% of the continental area. Emphasis is placed on the distribution, the mass balance, the motion of the ice and the stability conditions of the sheet. Finally, a brief review of the antarctic climate is given, summarizing the most typical and harsh features. A general view of the history of exploration and of the political and economic potential of Antarctica is given. (Auth.)

F-20881
McClain, E.P., **Eleven year chronicle of one of the world's most gigantic icebergs,** *Mariners weather log,* Sep. 1978 22(5), p.328-333, 18 refs.

Data on satellite-determined positions of the Trolltunga giant iceberg during 1967 through 1978 are reported. The iceberg was formed in 1967 from the Trolltunga ice tongue at 69.5S and 1W, and was named after its origin. Chronology and dimensions of the gigantic iceberg are tabulated. The amount of melting, average speed of the iceberg along the ocean currents and sea water temperature are discussed in the context of utilizing icebergs as a source of fresh water.

F-20882
Briat, M., **Evaluation of levels of Pb, V, Cd, Zn and Cu in the snow of Mt. Blanc during the last 25 years,** International Colloquium on Polluted Atmospheres, 13th, Paris, France, April 25-28, 1978. Proceedings. Edited by M.M. Benarie, Studies in environmental science, Vol.1, Amsterdam, The Netherlands, Elsevier Scientific Publishing Co., 1978, p.225-228, 10 refs.

For evaluating the influence of pollution on the atmosphere in temperate regions, samples from a snow core covering the period 1948-1974 and situated at the 4250 m level of the Mt. Blanc massif were analyzed for chemical composition. All the elements analyzed, except Cl, which is produced primarily by marine sources, are mostly of continental origin and can be explained as such. However, levels of Pb, V and Cd have increased up to a net factor of 2 since 1950, which parallels increased production of gasoline additives (Pb), increased use of heavy oils (V) and increased consumption of gasoline (Cd). Concentration of chemical elements in the snow of Mt. Blanc is compared to that of Antarctica, Greenland and Gt. Britain.

F-20889

Kulakov, I.IU., Maslovskiĭ, M.I., Timokhov, L.A., **Seasonal variability of Antarctic sea ice extent: its numerical modeling,** Symposium on Sea Ice Processes and Models, Sep. 6-9, 1977. Proceedings, Vol.2, Seattle, University of Washington, 1977, p.121-127, 6 refs.

Thermal factors should be considered in calculations of the antarctic ice edge position to get a good agreement between calculated results and observed positions. Effects of the dynamics of antarctic sea ice are also significant. The mechanism involves concentration changes which, in turn, affect heat fluxes directed towards lateral and bottom ice floe surfaces. The rate of ice melting and freezing in winter is determined by heat balance equations, which also influence the variability of ice concentration. The latter effect on the ice drift speed was not considered. The initial data for the calculations include seasonal climatic data on total radiation, atmospheric pressure, air temperature, and water temperature taken from the Soviet Atlas of the Antarctic. The calculation grid has 1 deg latitudinal step and 5 deg longitudinal step. The results show that consideration of dynamical factors changes the calculated ice edge positions. The largest error of calculations is for the ice edge position in the Weddell Sea. This might be attributed to the insufficient information on heat fluxes coming from the quasi-homogeneous oceanic layer. (Auth.)

F-20890

Parkinson, C.L., Washington, W.M., **Summary of a large-scale sea-ice model,** Symposium on Sea Ice Processes and Models, Sep. 6-9, 1977. Proceedings, Vol.2, Seattle, University of Washington, 1977, p.128-136, 15 refs.

A summary is presented of a large-scale numerical model, which has been developed to simulate the annual cycle of sea-ice advance and retreat in both the Arctic and Southern Oceans. The model employs an 8-hour timestep and a rectangular grid with horizontal resolution approximately 190 km. Thermodynamic and dynamic adjustments are calculated sequentially, the thermodynamics being based on energy balances at the top and bottom surfaces of the ice and snow, and the dynamics being based on the following five forces: wind stress, water stress, Coriolis force, the pressure gradient due to the tilting of the sea surface, and internal ice resistance. Although each grid square is allowed only one ice thickness, each square also has a variable percentage of its area assumed ice-free, thus allowing more realistic ocean-atmosphere exchanges. (Auth.)

F-20891

Allison, I., Akerman, G., **Sea ice and ocean energy balance studies at Mawson, Antarctica,** Symposium on Sea Ice Processes and Models, Sep. 6-9, 1977. Proceedings, Vol.2, Seattle, University of Washington, 1977, p.137-146, 11 refs.

The present program of year round energy flux and oceanic measurements over sea ice and open water near Mawson, Antarctica, is described. The importance of various terms in the energy balance at different times of year, and the application of these results to the parameterization of surface energy exchanges in the sea ice region is under investigation. Particular emphasis is placed on the study of processes over open water and forming sea ice and on the role of oceanic heat flux in the over-all energy balance. Continuation and expansion of the present studies is planned until and during the FGGE. Preliminary results of the studies are presented. Fluxes of radiation and sensible heat over open water are calculated from measurements made during a twenty-day period in February 1977 and are compared with fluxes measured during February 1970. The measurements cover a period when the net energy budget is changing rapidly from one of heat gain by the water to one of heat loss, and during which heat exchange by turbulence is becoming increasingly important as a method of heat loss by the water prior to ice formation. (Auth.)

F-20907

Huppert, H.E., Turner, J.S., **On melting icebergs,** *Nature,* Jan. 5, 1978 271(5640), p.46-48, 5 refs.

Relative to the feasibility of towing icebergs and melting them to provide fresh water, it has been conjectured that melt water from a penned iceberg will rise, without much mixing, to the surface, where it can be siphoned off for subsequent use. Neshyba (1977:31-4205 or F-18611) claims that the melt water will have mixed significantly with its salty environment before reaching the surface. It is suggested that both claims may be in error. In the present experiments it is shown that the melt water mixes with a large volume of salty water and spreads out close to the level at which it is produced, and little, if any, rises to the surface. The vital importance of the salinity gradient is stressed.

F-20980

Raisbeck, G.M., Yiou, F., Fruneau, M., Lieuvin, M., Loiseaux, J.M., **Measurement of Be-10 in 1,000- and 5,000-year-old antarctic ice,** *Nature,* Oct. 26, 1978 275(5682), p.731-733, 13 refs.

This paper reports the use of the nuclear accelerator spectrometry technique for the determination of Be-10 concentrations in ice samples from Dome C believed to be about 1,000 and 5,000 yr old. The sample preparation is described. Measurements were made using the external ion source of the cyclotron. Ice samples were analyzed by comparing their Be-10/Be-9 ratio to those of standardized Be-10/Be-9 samples. Using an estimated annual precipitation rate of 3.7 cm of water at the sample site, the average Be-10 concentration (26,000 atoms per g ice) represents a Be-10 deposition rate of 1/3100 atoms/sq cm/s. This is much less than the value of 1/200 atoms/sq cm/s measured at a Greenland site. It is also 4 to 8 times smaller than the deposition rates found in most sea sediments. Measurements of the complete Be-10 profile over the entire length of the core from which the present samples were taken (estimated to go back to 35,000 B.P.) are planned.

F-20981

Colbeck, S.C., St. Lawrence, W., Gow, A.J., **Creep rupture at depth in a cold ice sheet,** *Nature,* MP 1168, Oct. 26, 1978 275(5682), p.733, 13 refs.

Experimental evidence has not supported the hypothesis that tectonic processes operating within glaciers and ice sheets are analogous to those in the Earth. However, evidence of the existence of discrete shear planes within the antarctic ice sheet (31-1071 or F-17742) and evidence described here relating to the Greenland ice sheet indicate that faulting takes place at depth in cold ice sheets. The evidence suggests reconsideration of the concept of correspondence between flow and rupture at depth in the Earth and in cold ice sheets, as suggested earlier. Direct investigations at depth in ice sheets are made with relative ease as compared to the nearly impossible task of direct measurements in the Earth's mantle.

F-20982
Galbally, I.E., Roy, C.R., **Loss of fixed nitrogen from soils by nitric oxide exhalation,** *Nature*, Oct. 26, 1978 275(5682), p.734-735, 29 refs.

This paper reports the first measurements indicating that NO is continuously exhaled from soils, including ungrazed, unfertilized grassland. Measurements were made at three locations (38 deg S). It is noted that the emissions reported here are, per unit area, about 40 times larger than the depositions of NO3 nitrogen reported for antarctic ice by Parker et al. It is speculated that the NO3 nitrogen in antarctic ice may result from the long-range transport of fixed nitrogen from the continental regions of the Southern Hemisphere.

F-20984
Bogorodskiĭ, V.V., **Radiosounding of ice,** *U.S. Army Foreign Science and Technology Center. Translation*, Oct. 1976 FSTC-476-76, 84p., ADB-018 957L, For Russian original see F-15902.

The physical fundamentals of ice sounding based on the pulse radar method are presented in concise form. The electromagnetic characteristics of various types of ice and the techniques for their measurement are presented. Also discussed are the fundamentals of pulse radar use for sounding such comparatively strongly absorbing media as sand and permafrost, including permafrost soils and freshwater bodies. (Auth. mod.)

F-21061
Neshyba, S., **On melting icebergs,** *Nature*, Oct. 12, 1978 275(5680), p.567, 6 refs.

It is postulated that Huppert and Turner's laboratory studies (33-1453 or F-20907) of ice melt in warm, salt-stratified water, which demonstrate a system of tilted convection layers of melt mixture interleaved with ambient fluid, are useful in focusing research upon the complex phenomenon of iceberg melt but can not be extrapolated so directly to *in situ* antarctic iceberg melting as the authors have done, for several reasons. The reasons are enumerated.

F-21066
McClain, E.P., **Use of infrared and visible imagery for sea ice monitoring,** Washington, D.C., National Environmental Satellite Service, 17p. + 14 figs., 35 refs. Unpublished manuscript. Background material for WMO Workshop on Remote Sensing of Sea Ice, Washington, D.C., Oct. 16-20, 1978.

This is a supplement to and an updating of "Earth satellite measurements as applied to sea ice problems" (see 29-3205 or F-14829). Emphasis is given to the mapping of pack ice conditions and to the climatic effects of ice in the Arctic and Antarctic. The use of visible and infrared scanners carried on aircraft and spacecraft is described, and special processing of satellite data is discussed. The U.S. Navy has prepared weekly operational ice analysis and forecasts for the Arctic and Antarctic since 1970. Data were assembled into atlas form and published for the Arctic since 1972, and for the Antarctic since 1973. NOAA satellite data are used also for climate or climate-related investigations, i.e., to study sea ice variations in relation to climate, finding correlations between variations of annual mean temperature and the duration and extent of sea ice.

F-21067
Paren, J.G., Glen, J.W., **Electrical behaviour of finely divided ice,** *Journal of glaciology*, 1978 21(85), p.173-191, In English with French and German summaries. 25 refs.

The electrical behavior of ice which has been finely ground and compressed was investigated during aging in air and over a range of temperatures. The dielectric behavior may be accurately represented as the sum of two elliptical relaxation spectra. The behavior eventually stabilizes with similar activation energies for the mean relaxation time of each spectrum *c.* 0.25 eV, and the ratio of the relaxation times is ten in samples of density *c.* 0.42 Mg/cu m. Arguments are presented on whether the higher-frequency dispersion is a consequence of the heterogeneous nature of the samples or is a bulk relaxation process. The similarities between the behavior of such finely ground ice and of deposited snow and polar glacier ice are discussed. The extent to which the results may be attributed to surface adsorption of CO2 are examined by reference to measurements of the CO2 content of finely divided ice and ice from polar regions. (Auth.)

F-21068
Hargreaves, N.D., **Radio-frequency birefringence of polar ice,** *Journal of glaciology*, 1978 21(85), p.301-313, In English with French and German summaries. 32 refs.

Radio-echo observations have shown that polar ice *in situ* is birefringent. The most likely explanation of the birefringence is an anisotropy in the radio-frequency dielectric constant of the ice single crystal, combined with the ordering of the orientations of the ice crystals in polar ice. It is possible to calculate the birefringence of ice which has a distribution of crystal orientations, using a technique similar to that used to derive the dielectric properties of heterogeneous media. The experimentally observed birefringence may then be shown to be consistent with the crystal orientation fabric at the site of the observations, if the anisotopy of the dielectric constant is slightly less than 1%, that is, slightly less than the accuracy of the laboratory measurements which have failed to detect any anisotropy. Further experimental observations might be used to obtain information on not only the level of anisotropy of the single crystal but also on the crystal orientation fabric of the ice. (Auth.)

F-21069
Jezek, K.C., Clough, J.W., Bentley, C.R., Shabtaie, S., **Dielectric permittivity of glacier ice measured *in situ* by radar wide-angle reflection,** *Journal of glaciology*, 1978 21(85), p.315-329, In English with French and German summaries. 28 refs.

Values of relative permittivity measured by the wide-angle reflection technique on the Ross Ice Shelf show substantial variations between sites, from 3.09 to 2.89, with estimated errors of 0.03. The largest values, closest to those normally measured in the laboratory, are found nearest to the grounded ice sheet; values decrease generally in the direction of thinner ice that has been longer on the ice shelf. We believe the variation reflects some real physical phenomenon in the ice shelf, either a true variation in the permittivity of the ice or a complication of the ray-path geometry, but are not able to offer a satisfactory model at present. (Auth. mod.)

F-21070
Duval, P., **Anelastic behaviour of polycrystalline ice,** *Journal of glaciology*, 1978 21(85), p.621-628, In English with French and German summaries. 21 refs.

Torsion creep tests were performed on glacier ice at temperatures above -12C. The polycrystalline ice, when unloaded, exhibits creep recovery. The time-dependent recoverable component of deformation (or anelastic strain) is described in a mathematical relationship. The anelastic modulus for times in excess of 3h is always smaller than the dynamic elastic modulus. The movement of dislocations composing the sub-boundaries or in dislocation pile-ups may produce this important reversible deformation. The time-dependent recovery is explained in a similar way to the transient creep behavior observed at low temperatures for metals. The small temperature dependence of creep recovery would arise from the existence of a distribution of internal stress values. The samples used were taken in the French Alps and in Terre Adélie, Antarctica. (Auth. mod.)

F-21078

Cadwalader, J., **Moving ice,** *Frontiers*, Autumn 1978 43(1), p.20-22.

DSI 505.73F93

The author describes the features of the ice regime of antarctic waters observed while on sea duty with Task Force 43, the U.S. Naval Support Force, Antarctica, from 1955 to 1959. Observations are made on sea and terrain ice features, icebreaker design, ice navigating, icebreaking operations, methods of mooring ships, and resupply efforts. Brief mention is also made of the sights of the journey, i.e., marine wildlife, points of historical interest, etc.

F-21090

Vialov, S.S., **Visco-plastic flow of glacial covers and the laws of ice deformation,** Hanover, N.H., Cold Regions Research and Engineering Laboratory, 1970, 30p., AD-715 031, For Russian original see Antarctic Bibliography 1951-1961,.3009. 8 refs.

The report presents the results of investigations which were made by the author during the Second Antarctic Expedition (1956-1958). In the first part, the author considers the results of laboratory investigations of the laws of ice deformation. The second part is devoted to the problems of visco-plastic flow of glacial covers and a comparison of the analytic results which were obtained with data from observations under natural conditions in the Antarctic. (Auth.)

F-21094

Clough, J.W., Hansen, B.L., **Ross Ice Shelf Project,** *Science,* Feb. 2, 1979 203(4379), p.433-434, 16 refs.

A hole was drilled through the Rose Ice Shelf 450 km from the barrier. Scientific sampling through this hole revealed a sprase population of crustaceans, fish, and microbial biomass. The seabed consists of mid-Miocene glaciomarine mud. Geothermal heat flow is average. Oceanographic data indicate an active circulation and melting at the base of the ice. (Auth.)

F-21113

Budd, W., McInnes, B., **Modelling surging glaciers and periodic surging of the Antarctic ice sheet,** Climatic change and variability: a southern perspective, New York, Cambridge University Press, 1978, p.228-233.

DLC QC981.8.C5C56

The authors discuss their model for glacier surge in terms of the characteristics of the Wilkes Land ice sheet, the Lambert-Amery basin, and the West Antarctic-Ross basin. It appears that, if the model is valid for the areas studied, the present profile is one typical of the post-surge slow buildup stage, not the pre-surge state considered by some glaciologists to presage an ice age.

F-21122

Vilenskiĭ, V.D., Koroleva, N.I., **Sulfate content in the antarctic ice cap,** *U.S. Army Foreign Science and Technology Center. Translation,* July 1977 FSTC-430-77, 15p., ADB 025-550, For Russian original, see F-14003 or 29-892. 19 refs.

Sulfate concentration in ice can be determined by turbidimetry or titrimetry in comparison with concentration by evaporation. Sulfate concentration in the snow of antarctic littoral regions varies within wide limits with no seasonal character. Sulfate concentration decreases with distance from the coast. It is assumed that sulfate is deposited primarily by dry precipitation.

F-21132

Parkinson, C.L., Washington, W.M., **Large-scale numerical model of sea ice,** *Journal of geophysical research,* Jan. 20, 1979 84(C1), p.311-337, Refs. p.335-337.

Work at the National Center for Atmospheric Research has resulted in the construction of a large-scale sea ice model capable of coupling with atmospheric and oceanic models of comparable resolution. The sea ice model itself simulates the yearly cycle of ice in both the northern and the southern hemispheres. Horizontally, the resolution is approx 200 km, while vertically the model includes four layers, ice, snow, ocean, and atmosphere. Both thermodynamic and dynamic processes are incorporated, the thermodynamics being based on energy balances at the various interfaces and the dynamics being based on the following five stresses: wind stress, water stress, Coriolis force, internal ice resistance, and the stress from the tilt of the sea surface. Although the ice within a given grid square is of uniform thickness, each square also has a variable percentage of its area assumed ice free. The model results produce a reasonable yearly cycle of sea ice thickness and extent in both the Arctic and the Antarctic. In the Antarctic the ice expands from a minimum in Mar. to a maximum in late Aug., remaining close to the continent in the former month and extending northward of 60S in the latter month. Maximum thicknesses are about 1.4 m. The distribution of modeled ice concentrations correctly reveals a more compact ice cover in the northern hemisphere than in the southern hemisphere. (Auth. mod.)

F-21138

Adamenko, V.N., **Short-wave radiation attenuation by snow cover, ice and water investigated on the basis of data gathered in the Mirnyy area** [Oslablenie korotkovolnovoĭ radiatsii snezhnoĭ tolshcheĭ, l'dom i vodoĭ po dannym nabliudeniĭ v raĭone observatorii Mirnyĭ], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy.* 1977 Vol.64, p.64-71, In Russian. 12 refs.

Results of studying short-wave radiation penetration into snow, ice and water using highly sensitive instruments are presented. Conditions of short-wave radiation attenuation in water with and without ice cover are compared. Changes in illumination up to 100-200 m are related to short-wave radiation attenuation. The basic characteristics of attenuation by water and ice of both light and short-wave radiation in pack ice of various thicknesses are identified. The problem of attenuation of light and short-wave radiation by snow cover on the continent between the 105th and 125th km along the Mirnyy-Vostok traverse route is also investigated.

F-21156

Dressler, K., Meier, S., **Flow rate and ice discharge of the Hays, Campbell and Assender Glaciers, Enderby Land, Antarctica** [Ausflussgeschwindigkeit und Eisausstoss des Hays-, Campbell- und Assender-Gletschers, Enderby-Land, Antarktika], *Petermanns geographische Mitteilungen,* 1977 121(3), p.224-225, In German. 10 refs.

This short report presents data on flow rate and calving measurements obtained from the Hays, Campbell and Assender Glaciers by Soviet and German scientists since 1972. The results of photogrammetric survey show that the velocity of the Campbell Glacier's tongue is about 300 m/yr, and the Hays, Campbell and Assender Glaciers are found in constant flow (state of permanent surge). Topographic maps of the three glaciers are given at different scales.

F-21157

Kosiba, A., **Snow, glaciers, ice sheets** [Śniegi, lodowce, lądolody], Warsaw, Wydawnictwa Szkolne i Pedagogiczne, 1978, 184p., In Polish. 66 refs.

This textbook is a general introduction to concepts of glaciology, snow and ice physics, climatology of cold regions, cold area hydrology and other related topics. Physical and chemical characteristics of snow and ice, snow cover features, glaciers, river and lake ice, sea ice, continental ice sheets of Antarctica and Greenland, and climate are each the subject of a chapter. The book is illustrated with many photographs.

F-21159

Delmas, R., **Potentiometric microdetermination of sulfate ions** [Microdosage potentiométrique de l'ion sulfate], *Mikrochimica acta*, 1978 No.1, p.219-228, In French with German and English summaries. 13 refs.

The potentiometric titration of very low quantities of sulphate (down to 0.25 micro g) in very small water samples (0.25 ml) is described. Sulphate is precipitated by lead perchlorate in a 50% water-dioxan mixture. The excess of lead is determined with a solid-state lead-selective electrode by the known addition method, using Gran's plot paper for location of the equivalence point. The problem of the agitation has been solved by depositing the sample on a rotating Teflon disc. With the aid of an automatic microburette a titration takes less than 10 minutes. More than 100 samples of antarctic polar snow have been analyzed after a 50-100 times preconcentration of the melt water. (Auth. mod.)

F-21190

Kukla, G.J., **Recent changes in snow and ice,** Climatic change, edited by J. Gribbin, London, Cambridge University Press, 1978, p.114-129, 36 refs.

DLC QC981.8.C5C55

Observations on the sensitivity of snow and ice fields in both hemispheres to the seasonal march of insolation are summarized. In the southern hemisphere, the extent of the antarctic pack-ice fields is especially sensitive to insolation in early Nov. Higher insolation to pack-ice fields at this time should result in shorter ice seasons and a smaller average extent of the pack. Minimum global extent of snow and ice and minimum radiation losses over snow and ice areas are reached in Aug. and Sep.

F-21202

Kotliakov, V.M., Lapina, I.IA., **Soviet glaciological research in 1977** [Sovetskie gliatsiologicheskie issledovaniia v 1977 godu], *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭi. Khronika obsuzhdeniia*, Jan. 1978 No.32, p.5-13, In Russian.

Activities and accomplishments of the Soviet antarctic research effort for 1977 are briefly reviewed. Taking part in the SAE for 1977 were the Moscow State University, the Arctic and Antarctic Institute and the Institute of Geography of the Academy of Sciences.

F-21203

Paterson, W.S.B., Nitsan, U., Clarke, G.K.C., **Investigation of creep instability as a mechanism for glacier surges,** *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭi. Khronika obsuzhdeniia,* Jan. 1978 No.32, p.82-92, 201-209, In Russian and English. Discussion p.190-191, 278-280. 30 refs.

A mathematic model is offered to analyze creep instability as a possible mechanism for glacier surges. The main differences between the authors' analysis and those of previous workers are 1) inclusion of the effect of vertical advection, an important means of heat transfer, and 2) use of the Arrhenius relation for the temperature dependence of the flow law of ice rather than an approximation to it. Theoretical predictions are compared to field data gathered at three antarctic glaciers, two in Greenland, and a number in Canada.

F-21204

Bozhinskiĭ, A.N., Grigorian, S.S., **Internal heating and surges of nontemperate glaciers** [Vnutrennyĭ razogrev i podvizhki kholodnykh lednikov], *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭi. Khronika obsuzhdeniia*, Jan. 1978 No. 32, p.92-98, 210-213., In Russian and English. Discussion p.191, 278-279. 19 refs.

Temperature gradients, heat conductivity, heat balance and pressure are discussed with relation to the possibility of analyzing flow and surging in cold glaciers. The mathematical analysis supports the theory that cold glacier movement is tied to internal heating especially at the bed. Data on a number of cold glaciers, including the Meserve Glacier in Antarctica, are compared in a chart.

F-21207

Dykins, J.E., **Ice engineering—tensile properties of sea ice grown in a confined system,** *U.S. Naval Construction Battalion Center, Port Hueneme, Calif. Civil Engineering Laboratory. Technical report,* July 1970 NCEL-TR-689, 55p., AD-874 807, 10 refs.

Increasing operational use of ice areas in arctic and antarctic regions has created a need for improved knowledge for utilization of polar ice for shore based activities and floating platforms. Tensile strength envelopes were developed for horizontally and vertically oriented specimens of saline ice. The salinity, density, and petrographic structure of the 7- to 9-ppt salinity natural seawater ice, which was grown in the laboratory, are closely identifiable with the characteristics of sea ice formed in a natural environment. This observation was based on comparison of the upper 44 cm of laboratory ice with a similar thickness of natural sea ice. The tensile strength was found to be a nonlinear function of temperature; there were strong implications, however, that a linear relationship with salinity may exist. The strength was found to be dependent on orientation of the stress field with both the grain (crystal) and subgrain (platelet) structure. Limited study indicates that the tensile strength of saline ice is appreciably reduced as stress rates increase above 25 psi/sec. (Auth.)

F-21226

Gade, H.G., **Melting of ice in sea water: a primitive model with application to the antarctic ice shelf and icebergs,** *Journal of physical oceanography*, Jan. 1979 9(1), p.189-198, 17 refs.

Steady-state conditions are assumed to exist everywhere in the case of melting of the underside of an infinite slab of ice floating in sea water. Basic transfer equations for heat and salt are established, and solutions derived for the interior corresponding to given far field values of the temperature and salinity of the water. The solutions are discussed in the T-S diagram where the behavior is particularly simple. Determining parameters are the characteristic velocities ksd and Ksh, where ks and Ks are the molecular and turbulent diffusivities, respectively, of salt, d and h, the thicknesses of the corresponding laminar and turbulent layers. Also, the nonmelting/nonfreezing case is discussed and the determining parameter established. Application of the theory to the Ross Ice Shelf (Little America V) gives acceptable results. Analysis of the static stability of the melt water mixtures reveals that with ambient temperatures approaching 17C, the stratification becomes unstable. Icebergs brought to tropical waters will cause melt water mixtures to intrude at subsurface levels. Finally, convection obtained in laboratory experiments with melting ice in sea water is reported to be in concordance with the theoretically derived stability criterion. (Auth.)

F-21255

Boutron, C., Lorius, C., **Trace metals in antarctic snows since 1914,** *Nature*, Feb. 15, 1979 277(5697), p.551-554, 21 refs.

The results of the variations of the concentrations of 12 elements, including Pb, Cd, Cu, Zn and Ag in snow deposited from 1914 to 1974 at an uncontaminated site in East Antarctica, are discussed here. As the composition of snow in central Antarctica is shown to be closely correlated to that in the lower atmosphere, this provides a valuable historical record of the composition of remote aerosols in the Southern Hemisphere. It is found that Pb, Cd, Cu, Zn and Ag were already strongly enriched 60 yr ago (with respect to the composition of refer-

ence crustal and marine sources), and that both the concentrations and the enrichment factors observed in 1914 for these five elements are comparable to the present ones. This suggests that the present background atmospheric concentrations of Pb, Cd, Cu, Zn and Ag in the Southern Hemisphere are not strongly influenced by global pollution, but are related to natural phenomena, possibly volcanism.

F-21262

Picciotto, E.E., **On the origin of mineral impurities in ice,** *U.S. Army Cold Regions Research and Engineering Laboratory,* TL 696, Jan. 1979, 21p., ADA-063 315, 6 refs. For French original see 32-3814.

Mineral impurities can originate from four main sources: the ocean, the lithosphere, extra-terrestrial space and man's activities. Whatever the particular objective envisaged, besides analytical problems, any research in this field faces a common general problem: determination of the relative contributions from each source. This paper discusses chemical and isotopic methods which will give a solution to this problem. The main difficulty lies in the large chemical fractionations which appear to take place at all stages of the passage between the source and the place of deposition. Two cases of definite identification of the origin are presented: evaluation of the extraterrestrial component in firn samples from Plateau Station (East Antarctica) based on the measurement of Mn-53, and the identification of a man-made component in the Pb found in an alpine glacier, based on the relative abundance of the stable isotopes of Pb. (Auth.)

F-21263

Bogorodskiĭ, A.V., Popov, I.K., **Instrument studies of the submerged parts of icebergs in the Southern Ocean,** *U.S. Army Cold Regions Research and Engineering Laboratory,* Jan. 1979 TL 702, Physical characteristics of geophysical processes in polar regions, edited by V.V. Bogorodskiĭ and A.V. Gusev, p.78-82, ADB-033 914, 1 ref. For Russian original see 33-732 (F-20654). Distribution limited to U.S. Government agencies only.

Side-looking radar is successfully used to study the underside of icebergs. Results of these investigations into the extent of immersion of medium sized icebergs are analyzed.

F-21280

Boutron, C., **Influence of natural and anthropogenic aerosols on geochemistry of polar snow** [Influence des aérosols naturels et anthropogéniques sur la géochimie des neiges polaires], France. Centre national de la recherche scientifique. Laboratoire de glaciologie. Publication No.254, 1978, 283p., In French. Ph.D. thesis. Refs. p.263-276.

Over 200 samples of snow from Antarctica, Greenland, and Devon Island have been analyzed for 12 elements. The methods of contamination-free sampling and analysis, developed after considerable experimentation, are described in detail. The background fallout rate for Central Antarctica and Greenland—assumed to be representative of the entire globe—does not appear to have been influenced significantly by human activity during the last century, except perhaps for Pb and Zn in the Northern Hemisphere. The origin of each element is determined by a statistical method refined by the introduction of space and time variables. Na, Mg, K, and Ca may be of both oceanic and continental origin; the other elements are always of continental origin, which is detritic in the case of Al, Fe, Mn, K, and Ca, and nondetritic for Pb, Cd, Cu, Zn, and Ag. Concentrations vary little with distance from the sea, except for Na, Mg, K, and Ca in Antarctica, which decrease rapidly for the first 100 km from the coast, then increase slightly toward the center of the continent. Concentrations show a fluctuation in time, but present values are comparable to those obtained at the beginning of this century.

F-21282

Radok, U., **Climatic roles of ice: a contribution to the International Hydrological Programme (IHP),** *International Association of Hydrological Sciences. Bulletin,* Sep. 1978 23(3), p.333-354, In English with French summary. Refs. p.351-354.

Terrestrial ice is featuring prominently in current speculations about consequences and causes of marked climatic anomalies. This review is an attempt to provide the climate debate with a cryospheric sense of proportion matching present glaciological knowledge and understanding. The more traditional cryospheric emphasis in climatology has been on the behavior of glaciers and ice sheets. Progress towards computer modelling of glaciers is appraised. Although at the opposite end of the time scales of climate, polar ice sheets are as important for its understanding as snow and sea ice. Cores from these ice sheets provide records of their history which has created their temperature and their distribution of stable and radioactive isotopes, trace chemicals, and dust. But the dynamics of these ice masses is also involved and needs to be modelled for an unambiguous interpretation of the core records in terms of past climate. This applies equally to any predictions of how the polar ice might respond to drastic short-term climatic trends. Various currently observed antarctic thickness profiles have suggested that an adequate model of the Antarctic ice sheet must allow for the possibility of large-scale surging. (Auth. mod.)

F-21291

Vivian, R., comp, **Glaciological field stations, Parts 1 and 2,** *Glaciological data,* Feb. 1978 No.4, 227p. (2 vols.), Numerous refs.

Data on nearly 70 field stations, world wide, is given in concise form. Basic information about each station includes: location, accessibility, and access point; research facilities and accommodations; major research interests and duration of programs; data generated and availability; name, address, and telephone number of sponsoring agency.

F-21297

Kusunoki, K., ed, Suzuki, Y., ed, **Ice-coring project at Mizuho Station, East Antarctica, 1970-1975,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Dec. 1978 No.10, 172p., Refs. For individual papers see F-21298 through F-21313 or 33-2809 through 33-2824.

This volume is an outgrowth of a joint program of ice core drilling at Mizuho Station in East Antarctica by the Japanese Antarctic Research Expedition (JARE) in 1971-1975 and collaborative research on core analysis done at the drilling site and in home laboratories up to 1978. The volume contains 16 papers: one on drilling technology and operation, eight on the physical and chemical characteristics of retrieved cores, and 7 containing data from the core analysis and borehole logging. Core analysis is still in progress.

F-21298

Suzuki, Y., Takizawa, T., **Outline of the drilling operation at Mizuho Station,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Dec. 1978 No.10, p.1-24, 10 refs.

Ice drillings were carried out in 1971, 1972 and 1974-75 at Mizuho Station as part of the Glaciological Research Program in Mizuho Plateau of the Japanese Antarctic Research Expedition. Four holes, 41.0 m, 75.0 m, 147.5 m and 145.4 m deep, were drilled and 350 m of cores from them were sent to Japan. The operation is chronologically outlined from the embryo stage of its planning, with emphasis placed on its technical aspects. (Auth.)

F-21299
Watanabe, O., Kato, K., Satow, K., Okuhira, F., **Stratigraphic analyses of firn and ice at Mizuho Station,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Dec. 1978 No.10, p.25-47, 21 refs.

Stratigraphy of the 150-m core from Mizuho Station is studied by visual observations as well as by analysis of density and oxygen isotope profiles. Stratigraphic structures are well preserved to a depth of 70 m. Considerably deviated values of density from the average depth-density curve serve as good indicators of the texture of initially deposited snow. From stratigraphic interpretation, about 10.6 g/sq cm is estimated as the mean annual accumulation. With this value the age of the lowermost part of the 150-m core is estimated to be some 1100 years B.P. excluding the periods of hiatus of annual layers. In the delta O-18 profile to the depth of 60 m, the smallest peak indicating the coldest climate is seen at a depth of 32 m which is dated back to some 2000 years B.P. Comparison of the delta O-18 profile in the Mizuho core with that in the Camp Century core indicates that the period of hiatus of annual layers is about one-third of the real duration of the core formation and the mean annual accumulation is about two-thirds of 10.6 g/sq cm at Mizuho Station in the past 300 years. (Auth.)

F-21300
Narita, H., Maeno, N., Nakawo, M., **Structural characteristics of firn and ice cores drilled at Mizuho Station, East Antarctica,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Dec. 1978 No.10, p.48-61, 21 refs.

Sizes, shapes and c-axis orientations of crystal grains as well as specific areas of grain boundaries and internal free surfaces were measured for firn and ice core samples of 147.5 m length obtained in 1971 and 1972 at Mizuho Station, East Antarctica. Five critical depths were found at which some structural changes occurred. They were 8 m, 30 m, 55 m, 70 m and 110 m. Their corresponding densities were 550, 730, 840, 855 and 882 kg/cu m, respectively. The densities of 550 and 840 kg/cu m correspond to frequently reported figures at which the densification mechanism changes from mechanical packing of air voids to plastic deformation of ice grains, and from the plastic deformation to shrinkage of closed-off air bubbles. The critical density of 730 kg/cu m (30 m) was first pointed out by Maeno in 1974, who concluded that the bonding between ice grains reached its maximum or optimum state for packing at this density. The present analyses showed that air voids were gathered only at intersections of grain boundaries in the core samples at the critical density. The remaining two critical densities, 855 kg/cu m (70 m) and 882 kg/cu m (110 m), are related to alterations of mechanical stress fields; samples below 70 m contained layers of small grains intermittently, and at depths deeper than 110 m crystal sizes decreased, suggesting the presence of shear components. (Auth.)

F-21301
Maeno, N., Narita, H., Araoka, K., **Measurements of air permeability and elastic modulus of snow and firn drilled at Mizuho Station, East Antarctica,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Dec. 1978 No.10, p.62-76, 18 refs.

Air permeability and elastic modulus were measured for firn samples prepared from a 20-m pit and cores drilled to the depth of 147.5 m at Mizuho Station in East Antarctica. Air permeability decreased and elastic modulus increased with increasing depth or density. Two distinct changes were found to densities of 550 and 730 kg/cu m, i.e. at porosities of 0.40 and 0.20, in the plots of air permeability and elastic modulus against density or porosity. The former change is explained by the alteration of the densification mechanicism from mechanical packing to plastic deformation of ice particles, and the latter by the attainment of an optimum configuration of ice bounding for air permeation and mechanical strength. Observed results are compared with the theoretical air permeability of an ideal snow, to which all polar snows are considered to approach in a long aging period under high hydrostatic pressure and high homologous temperature. It is suggested that the optimum state, which is reached at the density of 730 kg/cu m or the porosity of 0.20, is that of snow in which air channels are mainly located at intersections of grain boundaries and some 30 percent of them are unblocked. (Auth.)

F-21302
Maeno, N., **Electrical behaviors of antarctic ice drilled at Mizuho Station, East Antarctica,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Dec. 1978 No.10, p.77-94, 25 refs.

The electrical properties of Antarctic firn and ice cores drilled at Mizuho Station to the depth of 145 m were studied in a wide range of frequency (0.1 Hz to 1 Mz) and temperature (0 to -50C). Remarkable differences were found between the cores taken from depths shallower than 55 m and those from deeper parts. Dielectric properties of the cores above 55 m, corresponding to cores permeable to air flow and with densities less than 840 kg/cu m could be explained as those of heterogeneous mixture-dielectrics of ice and air, though the physical meaning of the activation energies for dielectric relaxation and high-frequency conduction were not clarified completely. Cores deeper than 55 m, corresponding to impermeable cores with densities higher than 840 kg/cu m, showed extremely large dielectric constants and conductivities. Based on the results of the present electrical measurements, the alteration of densification mechanisms was suggested to occur at a depth around 30 m corresponding to the density of 730 kg/cu m, where the bonding and compaction of composing ice particles were regarded to have reached their optimum mode, which was also confirmed by petrographic analyses of cores such as areas of internal free surfaces and grain boundaries.

F-21303
Shoji, H., **Stress-strain tests of ice core drilled at Mizuho Station, East Antarctica,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Dec. 1978 No.10, p.95-101, 7 refs.

The mechanical properties of an ice sample (No. 143) taken from 100 m depth at Mizuho Station were investigated with stress-strain tests in uniaxial compression at temperatures of -6 and -16C. Strain rate employed in experiments ranged from 10,000,000 to 1,000,000/s. Stress-strain curves obtained are classified into two types: stress-yield type and stress-saturation type, according to the occurrence and non-occurrence of yield drop due to the internal cracking. The relationships between the maximum stress obtained from the curves and the strain rate (the stress dependence of the strain rate) thus obtained were compared with those for core samples taken at Byrd Station. It was found that the Mizuho core sample resembled Byrd core sample No.145 (300 m depth) in the mechanical property shown in the relationships stated above. Peculiarity in the property exhibited at -16C experiments is interpreted by the generation of cracks during deformation of high strain rate. (Auth.)

F-21304
Nakamura, T., Abe, O., **Internal friction of antarctic Mizuho ice cores at low frequency,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Dec. 1978 No.10, p.102-113, 8 refs.

Internal friction and shear modulus of Antarctic ice cores drilled at Mizuho Station were measured with an inverted torsion pendulum in a frequency range of 4 to 9 Hz and a temperature range of 96 to 272K. As a function of temperature, the measured internal friction of every core showed two peaks. One around 265K was considered due to the grain boundary and the other around 150K to the mechani-

cal relaxation, because the internal friction of a single crystal has only one peak around 170K corresponding to the latter peak. The height of the former peak decreased with an increase in the density of the core. The shear modulus decreased very slowly with increase of temperature to around 253K, where internal friction begins to increase sharply. The decrease of shear modulus was rapid above that temperature. The shear modulus increased linearly with the density. (Auth.)

F-21305

Yamada, T., **Anisotropy of ultrasonic wave velocities in Mizuho cores,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Dec. 1978 No.10, p.114-123, 13 refs.

The snow cover at Mizuho Station is characterized by well-developed depth hoar. To clarify how the anisotropy of elastic wave velocities changes with the densification process of the depth hoar having an anisotropic texture, the P- and the S-wave velocities were measured directly as a function of depth for both the vertical and the horizontal direction using the ultrasonic pulse method applied to deep core samples drilled to the depth of 145 m at Mizuho Station. As for the P-wave velocity, the upper part of the ice sheet from the surface to the depth of 25-30 m (0.72-0.73 Mg/cu m density) was found to be anisotropic, while below that depth the ice sheet became isotropic. The curve of P-wave velocity versus density disclosed discontinuities at the densities of 0.65 and 0.84 Mg/cu m, which correspond to the depths of 10-16 and 55-60 m respectively. The facts indicate that the process of densification and metamorphism of snow and ice may change at these levels in the ice sheet at Mizuho Station. As for the S-wave velocity, the ice sheet was isotropic through all depths, whereas on the curve of S-wave velocity versus density only one discontinuity was clearly noticed, at the density of 0.65 Mg/cu m. (Auth. mod.)

F-21306

Kamioka, S., Kuroiwa, D., **Extinction coefficient of light of cores drilled at Mizuho Station, East Antarctica,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Dec. 1978 No.10, p.124-130, 12 refs.

The extinction coefficient of light of shallow ice core samples obtained at Mizuho Station was measured and its dependence on depth from 10 m to 110 m, the density in the range of 550-880 kg/cu m, and specific surface area of grains were investigated. The value of extinction coefficient decreased and asymptoted to a definite value with the increase of depth. (Auth.)

F-21307

Narita, H., Watanabe, O., Satow, K., Okuhira, F., **Compiled stratigraphic data from cores drilled at Mizuho Station,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Dec. 1978 No.10, p.132-135.

Stratigraphic analyses including layer features, grain sizes and depth hoar levels, were made under the transmitting fluorescent light for snow samples prepared from 20 m pit and drilled cores of JARE-12 and 13. The results of the stratigraphic analyses are given as well as the depths of measurements and names of observers.

F-21308

Narita, H., Maeno, N., **Compiled density data from cores drilled at Mizuho Station,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Dec. 1978 No.10, p.136-158.

Details of five separate series of measurements, amounting to a total of 3635 density measurements conducted on Mizuho cores during glaciological studies JARE-11, 12 and 13, are tabulated. The data include source of samples, depth range, remarks, series, average density, and cumulative mass per unit area for 0.5 m increments from the surface to 124 m.

F-21309

Narita, H., **Petrographic data from cores drilled at Mizuho Station,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Dec. 1978 No.10, p.159-164.

For the purpose of studying changes in petrographic structures of firn and ice with depth, about 160 vertical thin sections were prepared from JARE-13 cores covering from 23.5 m to 145.5 m in depth, and microphotographs of them were taken under ordinary and polarized light. The photographs and petrographic structures, together with the frequency of size parameter and the fabric pattern are given.

F-21310

Kato, K., **Oxygen isotopic composition in the cores from Mizuho Station,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Dec. 1978 No.10, p.165-166.

The results of oxygen isotope determinations on the Mizuho cores are given in delta 0-18 notation. The 0-18/0-16 ratio of CO2 equilibrated isotopically with a water sample was measured with a double collector mass spectrometer.

F-21311

Murozumi, M., Nakamura, S., Yoshida, Y., **Compiled data of chemical compositions in ice cores drilled at Mizuho Station,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Dec. 1978 No.10, p.167-168.

Data are presented on the concentrations of sodium, magnesium, and mercury in Mizuho cores.

F-21312

Fujii, Y., **Temperature profile in the drilled hole,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Dec. 1978 No.10, p.169.

Temperatures in a borehole drilled to a depth of 147.5 m by JARE-13 in 1972 are tabulated. Measurements were made with a thermistor, and the accuracy of the measurements was 0.02C.

F-21313

Narita, H., **Inclination of the hole drilled by JARE-13,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Dec. 1978 No.10, p.170-172.

The inclination of the hole drilled by JARE-13 was measured at every 5m down to 135m on Dec. 5, 1972, shortly after the termination of drilling at 147.5m below the snow surface. The measurements are tabulated, and the equipment is described and illustrated.

F-21317

Cary, P.W., Clarke, G.K.C., Peltier, W.R., **Creep instability analysis of the Antarctic and Greenland ice sheets,** *Canadian journal of earth sciences,* Jan. 1979 16(1), p.182-188, In English with French summary. 21 refs.

Creep instability, the runaway increase of temperature and deformation due to internal strain heating, is analyzed with a very simple model of one-dimensional heat transfer to estimate the stability of the antarctic and Greenland ice sheets. Derived stability maps indicate that for the assumed rheology both ice sheets are completely stable; however, the stability of the coastal region of Wilkes Land in Antarctica is only marginal and cannot be accurately determined because of uncertainties in the data, especially basal shear stress. (Auth.)

F-21336

Thomas, R.H., Bentley, C.R., **Equilibrium state of the eastern half of the Ross Ice Shelf,** *Journal of glaciology,* 1978 20(84), p.509-518, In English with French and German summaries. 19 refs.

Measurements of ice thickness, velocity, snow accumulation rates, and surface strain-rates are used to examine the state of equilibrium of three flow bands of the Ross Ice Shelf. The analysis gives the rate of thickening of the ice shelf in terms of the basal freezing rate, which is unknown. However, indirect evidence suggests that the basal flux ranges from a small value of freezing in the south to a melting rate of about one meter of ice per year at the ice front. If these values are correct, then the flow band in the south-east corner of the ice shelf appears to be thickening at an average value of (34) cm of ice per year. Persistent thickening at this rate must lead to grounding of large areas of the ice shelf. This would restrict drainage from west antarctic ice streams which feed this part of the ice shelf, and these would tend to thicken and advance their grounding lines into the ice shelf. Further north, near the RISP bore-hole site, the ice shelf is probably in equilibrium. The largest flow band is to the south and east of Roosevelt Island, and this also may be in equilibrium if there is significant bottom melting from ice shelf that is more than 100 km from the ice front. (Auth.)

F-21337

Job, J.G., **Numerical modelling of iceberg towing for water supplies—a case study,** *Journal of glaciology,* 1978 20(84), p.533-542, In English with French and German summaries. 13 refs.

The towing of unprotected icebergs from the antarctic continent (66S) to latitude 38S, has been simulated using an explicit hydrodynamic model and an extended two-dimensional melting model. It was found that nominal towing accelerations in excess of .00002 m/sec sq were required to deliver ice over this route in most circumstances, and minimum energy consumptions were obtained at accelerations around .0001 m/sec sq. Unprotected icebergs could be delivered with about 50% yield to latitude 38S, but the rate of deterioration in the warm waters indicates that protection would be required for longer journeys. The towing simulation was most sensitive to north-south current components, the total towing distance, and the rate of iceberg deterioration. Efforts directed towards locating suitable icebergs in the region of 50S to 60S, and towards increasing knowledge of the changing current patterns in the Southern Ocean would be most valuable, as would a knowledge of the mechanisms and rates of deterioration of icebergs in warm seas. (Auth.)

F-21339

Mayewski, P.A., Attig, J.W., Jr., **Recent decline in available moisture in northern Victoria Land, Antarctica,** *Journal of glaciology,* 1978 20(84), p.593-594, In English with French and German summaries. 2 refs.

Evidence from two areas in northern Victoria Land, Antarctica, demonstrate that available moisture has been declining since at least 1,265 B.P. The cause is not known. (Auth.)

F-21340

Kotliakov, V.M., Losev, K.S., Loseva, I.A., **Ice budget of Antarctica,** *Polar geography,* Oct.-Dec. 1978 2(4), p.251-262, 18 refs. For Russian original see 31-4415 or F-18681.

The components of the water-ice budget of Antarctica are analyzed on the basis of available Soviet and foreign data. According to a newly constructed map, annual snow accumulation in Antarctica averages 15.6 g/sq cm, or 2,000 cu km of water. Several ice domes have been identified in East Antarctica proceeding from the stable relation between accumulation and absolute surface elevation. The computed ice losses (in cu km per year) are: 10 through glacial runoff, 0 for evaporation-condensation, 20 through snow removal by the wind, 50 through ice melting at the bedrock, 320 through bottom melting of ice shelves, and 2,000 through iceberg calving. The amount of precipitation falling over Antarctica exceeds by 1.5% its accumulation on the ice sheet. The low accuracy of individual components of the budget does not permit a categorical conclusion to be made regarding its sign. (Auth.)

F-21376

Chang, A.T.C., Choudhury, B.J., **Microwave emission from polar firn,** *U.S. National Aeronautics and Space Administration. Technical paper,* Apr. 1978 No.1212, 20p. N78-21690.

The uses of a microscopic single particle scattering model are presented. The model, together with measured crystal size and temperature variation with depth, provides a quantitative explanation of observed brightness temperatures of north and south polar regions.

F-21386

Voloshina, A.P., **Workshop and two tutorial seminars in Zvenigorod, February 1978** [Rabochee soveshchanie i dve shkoly-seminara v Zvenigorode v fevrale 1978 goda], *Adademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭi. Khronika obsuzhdeniia,* 1978 No.33, p.5-28, In Russian.

Comprehensive information is given on three seminars. Work done in the Arctic, the Antarctic and mountains of middle latitude is discussed seperately for each sponsoring institution.

F-21387

Resolutions of a Workshop of the Glaciological Section, Feb. 1978 [Rezoliutsiia Rabochego soveshchaniia Sektsii gliatsiologii, fevral' 1978 g.], *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭi. Khronika obsuzhdeniia,* 1978 No.33, p.28-31, In Russian.

Activities and accomplishments of institutions in glaciological research in the Arctic and Antarctic for 1977 are described. The workshop also developed the program for 1978, which includes plans to increase efforts in paleoglaciological studies in the Antarctic, as well as continued work on the new Antarctic atlas.

F-21388

Korotkevich, E.S., **Symposium on Physics and Chemistry of Ice and the meeting of the Council of the International Antarctic Glaciological Project** [Simpozium po fizike i khimii l'da i zasedanie soveta Mezhdunarodnogo antarkticheskogo gliatsiologicheskogo proekta], *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanĭi. Khronika obsuzhdeniia,* 1978 No.33, p.38-41, In Russian.

A total of 58 papers based on ice crystal studies in the Antarctic were presented at the Symposium on Physics and Chemistry of Ice at Cambridge, England, Sep. 10-24, 1977. Studies carried out by the Soviet Union, U.S.A., Australia, Japan and England were concerned with ice crystal structure and its deformation due to temperature variations and pressure. The IAGP meeting took place with the participation of Australia, England, the Soviet Union, the United States and France. Reports of work done in 1976/77 and plans for future research were presented: the latter concerned routes for radiosounding of ice, locations for deep drilling, and traverses for general glaciological and geophysical surveys. Summaries of the papers are given.

F-21389
Korolev, P.A., Rudoĭ, A.N., **Glaciological investigations along the Mirny-Pionerskaya-Dome C profile** [Gliatsiologicheskie issledovaniia v marshrute Mirnyĭ-Pionerskaia-Kupol C], *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovaniĭ. Khronika obsuzhdeniia,* 1978 No.33, p.191, In Russian.

Glacial and geomagnetic studies were carried out in Jan.-March 1978 during the Mirnyy-Pionerskaya-Dome C traverse. General data on the accumulation and density of snow, obtained from 335 stakes along the traverse, are indicated. The settling of the snow-firn layer, isotope content and snow and ice temperature were examined in three boreholes. N. Young, a scientist from the University of Melbourne, participated in gravimetric, magnetometric and barometric observations.

F-21390
Khodakov, V.G., Godeĭchik, A.V., Moiseeva, G.P., **Rate of ice melting in water** [O skorosti taianiia l'da v vode], *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovaniĭ. Khronika obsuzhdeniia,* 1978 No.33, p.196-200, In Russian with English summary. 11 refs. Includes discussion.

Theoretical aspects of ice melting in water are considered. Experimental data, obtained on the Bolshoye Khadatinskoye Lake (Polar Urals) and in the laboratory of the Institute of Geography (Moscow), along with available literature permitted to deduce a criterion equation and formula. Melting of an iceberg transported from Antarctica to Australia and Arabia was calculated on the basis of the formula. Calculations show that without special thermal protection the iceberg will be totally consumed by underwater melting.

F-21391
Kotliakov, V.M., Lapina, I.IA., Chernova, L.P., **Annotated list of Soviet literature on glaciology for 1975** [Annotirovannyĭ spisok sovetskoĭ literatury po gliatsiologii za 1975 god], *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovaniĭ. Khronika obsuzhdeniia,* 1978 No.33, p.227-280, In Russian with English summary. 441 refs.

The list contains Soviet publications on glaciology, published in Russian (or having summaries in Russian) in periodicals, proceedings and transactions of conferences for 1975. Some publications of previous years omitted from earlier bibliographies are included. The annotations are grouped into the following sections: Organization of studies, Scientific meetings, Methods of studies, General problems of glaciology, Physics and chemistry of ice, Sea and river ice, Underground ice and aufeis, Paleoglaciology, The Arctic and Antarctic, The Caucasus, Central Asia and Kazakhstan, Siberia and the Far East, Avalanches and mudflows, Studies of snow cover, and Seasonal snow cover outside the areas of present-day glaciers.

F-21392
Grosval'd, M.G., **Symposium on the History of Antarctic Glaciation** [Simpozium po istorii oledeneniia Antarktidy], *Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovaniĭ. Khronika obsuzhdeniia,* 1978 No.33, p.284, In Russian.

A review is given of the Symposium on the History of Antarctic Glaciation, held in Moscow on May 10, 1978, and attended by Soviet scientists from various institutions. The symposium covered the subject areas of glacial history and changes of environment in the Antarctic and the Southern Ocean due to climatic variations. The complete proceedings of the symposium will be published in a special issue of *Antarktika* in 1979.

F-21404
Thomas, R.H., Sanderson, T.J.O., Rose, K.E., **Effect of climatic warming on the West Antarctic ice sheet,** *Nature,* Feb. 1, 1979 277(5695), p.355-358.

Climatic warming could cause increased melting from Antarctic ice shelves. Continued weakening of the ice shelves in this way would result in the ultimate collapse of most of the West Antarctic ice sheet. For complete removal of the ice shelves collapse of the ice sheet and a 5 m rise in world sea level could occur in less than 100 yr. More realistically, ice-shelf deterioration is likely to be a rather slow process, and even for a major and sustained warming trend ice-sheet collapse would take several hundred years, with most of the associated rise in sea level occurring during the final century. However, little is known about the glaciers that drain the northern part of the ice sheet. These glaciers have little or no protective fringe of ice shelf and, unless they flow over sufficiently high bedrock sills, they may show a more rapid response to increased temperatures. (Auth.)

F-21406
Langway, C.C., Jr., **Studies on terrestrial ice cores,** Colloquium on Planetary Water and Polar Processes, 2nd, Oct. 1978. Proceedings, Hanover, N.H., U.S. Army Cold Regions Research and Engineering Laboratory, 1978, p.11-27., Refs. p.24-27.

The author reviews the progress achieved since about 1965 in retrieving and analyzing polar ice cores. Most of the studies concern Greenland cores but many of the citations include work done in Antarctica. Significant advances are recorded in the technology of retrieval as well as in the scope and detail of the analyses which include: chemistry, stratigraphy, physical properties, microparticles, and stable and radioactive isotopes. Results of the investigations over the years have had significant bearing on a substantial number of scientific disciplines.

F-21407
Zeller, E.J., Parker, B.C., **Solar activity records planetary ice caps,** Colloquium on Planetary Water and Polar Processes, 2nd, Oct. 1978. Proceedings, Hanover, N.H., U.S. Army Cold Regions Research and Engineering Laboratory, 1978, p.186-192, Includes comments. 2 refs.

The authors describe the results of chemical analyses made on an ice core from South Pole Station. Nitrate and ammonium ion levels are identified and traced from the 10th century to the early part of the 20th. The fluctuations in ionic level are related to solar activity and climatology during this 1000 yr period. Extending this type of sequential analysis to other planets or satellites having ice caps must take into account the composition and structure of their atmospheres.

F-21486
Vilenskiĭ, V.D., Teĭs, R.V., Kiselevskiĭ, M.A., Kochetkova, S.N., **Some features of formation of oxygen isotopic composition in East Antarctic snow cover** [Nekotorye osobennosti formirovaniia izotopnogo sostava kisloroda v snezhnom pokrove Vostochnoĭ Antarktidy], *Geokhimiia,* Apr. 1978 No.4, p.578-584, In Russian with English summary. 10 refs.

Oxygen isotope composition was measured in snow samples taken at five locations between Mirnyy and Pionerskaya Stations. Delta-O-18 value decreases with distance from the coast and altitude, as average air temperature does. In the coastal zone (less than 50 km from Mirnyy, altitude less than 0.86% km, air temp. above -19C) snow oxygen isotope levels do not vary significantly. Between 50 and 353 km from the coast delta-O-18 values change 0.6% per degree of average air temperature. Observed variations of oxygen isotopes in annual snow layers are also due to local features of snow cover formation; thus they cannot be used directly to indicate temperature

changes over the years. Spatial irregularities in snowfall lead to significant variation in isotope composition in samples taken from several points in the same general area.

F-21490

Krefft, G., **Results of the research cruises of FRV *Walther Herwig* to South America, 28. *Woodsia meyerwaardeni* spec. nov., a new Gonostomatid from the South Atlantic** [Ergebnisse der Forschungsreisen des FFS "Walther Herwig" nach Südamerika, 28. *Woodsia meyerwaardeni* spec. nov., ein neuer Gonostomatide aus dem Südatlantik], *Archiv für Fischereiwirtschaft*, Aug. 1973 24(1/3), p.129-139, In German with English summary. 4 refs.

A new gonostomatid fish of the genus *Woodsia* Grey, 1959, is described. The new species, *W. meyerwaardeni*, differs from *W. nonsuchae* (Beebe, 1932), the type of this hitherto monotypic genus mainly by the festoon-shaped arrangement of the lateral photophores in front of the anal fin, by higher numbers of VAV photophores and gill rakers, and by a slightly reduced number of dorsal finrays. *W. meyerwaardeni* is a mesopelagic fish inhabiting the waters between the Antarctic and Subtropical Convergence. Its depth distribution ranges from 300 m to 1200 m in the western part of the area investigated, but from 500 m or 700 m, respectively, to 1200 m in the central and eastern parts. This range in depth seems to be sandwiched between the isotherms for 2.4C and 5C and/or the two isohalines for 34.4 per mill.

F-21491

Higashi, A., Shoji, H., **Mechanical tests of Antarctic deep core ice under hydrostatic pressure—Instrumentation and preliminary results,** *Hokkaido University, Sapporo, Japan. Ice Research Laboratory. Research paper*, 1979 No.40, p.41-47, In Japanese with English summary. 17 refs.

Effects of hydrostatic pressure on the mechanical properties of antarctic deep core ice were investigated by the use of a special uniaxial testing machine installed in a high pressure cell. The design and construction of the pressure cell as well as of the testing machine are described. Hydrostatic pressure up to 100 MPa could be attained and kept for several days in the cell, using a hydraulic pump with silicone oil. The testing machine was driven from the outside of the pressure cell by a rod penetrated through its thick wall. Volume change of the inner space of the cell caused by the movement of the driving rod was compensated by the movement of another rod from the opposite direction at the opposite end of the cell. The frictional force exerted on the driving rod at the bore hole in the cell wall was well separated from the real stress generated in a specimen, due to its uniaxial deformation. Preliminary compressive tests carried out at 30 MPa revealed that the strength of the deep core ice increased under hydrostatic pressure. This hardening effect is attributed to the shrinkage or closure of air-bubbles and cleavage cracks formed in the relaxation process of the deep core ice.

F-21496

Chang, A.T.C., Choudbury, B.J., Gloerson, P., **Microwave brightness of polar firn as measured by Nimbus 5 and 6 ESMR,** *U.S. National Aeronautics and Space Administration. Technical memorandum*, Oct. 1978 NASA-TM-79662, 20p., N79-13476, 20 refs.

The microwave emission from a half-space medium, characterized by coordinate dependent scattering and absorbing centers, was calculated by numerically solving the radiative transfer equation by the method of invariant imbedding. A Mie scattering phase function and surface polarization was included in the calculation. Also included are the physical temperature profile and the temperature variation of the index of refraction for ice. Using published values of grain size and temperature profile data of polar firn, the brightness temperature was calculated for the 1.55 cm and 0.8 cm wavelengths. For selected regions in Greenland and Antarctica, the results are in reasonable agreement with the observed Nimbus-5 and Nimbus-6 ESMR data. (Auth.)

F-21530

Gow, A.J., Kohnen, H., **Ultrasonic measurements on deep ice cores from Antarctica,** *Antarctic journal of the United States*, MP 1202, Oct. 1978 13(4), p.48-50, 3 refs.

This report discusses some results of recent measurements of ultrasonic velocities performed on ice cores collected in 1968 at Byrd Station. The analytical technique is described. It is concluded that measurement of ultrasonic velocities of cores from deep drill holes enables monitoring of the relation characteristics of the cores and determination of the gross trends of c-axis orientation in the ice sheet. Supplemented by optical thin section, studies can verify the exact nature of the fabric at any given depth and any inclination of the fabric symmetry axis with respect to the direction of propagation of P-wave velocity.

F-21530

Parker, B.C., Zeller, E.J., Harrower, K., Thompson, W.J., **Fixed nitrogen in antarctic ice and snow,** *Antarctic journal of the United States*, Oct. 1978 13(4), p.47-48, 4 refs.

Using portions of a 100-m South Pole firn core and snow pit samples, both a short term and long term cyclicity have been identified in the concentrations of nitrate (NO3-) and ammonium (NH4+) ions. The presence of significant NH4+ and absence of detectable nitrite (NO2-) in clean antarctic firn, ice, and snow had not been previously reported. Several climatic minimums apparently correspond to low NO3- and NH4+ levels generally. A Vostok ice core sample approx 10,000 yr old revealed the highest NO3- concentration of 525 microg of NO3-N per liter. Potential sources of these substances in antarctic snow and ice are being tested.

F-21532

Lorius, C., Donnou, D., **905-meter deep core drilling at dome C (East Antarctica) and related surface programs,** *Antarctic journal of the United States*, Oct. 1978 13(4), p.50-51, 8 refs.

Using a newly developed electromechanical corer a 905-m core was recovered after drilling at dome C for 42 days. Several operations were carried out along with the drilling: logging and sampling for further laboratory studies, total gas content determinations, crystal size measurements, tests for mechanical properties of the ice, and filtration of the collected meltwater. *In situ* measurements consisted of diameter and temperature profiles. A surface program was also carried out. It included meteorological observations and atmospheric sulfur dioxide sampling. Snow surface and accumulation studies were conducted, and the 5-m-deep pit was extended down to 8 m for stratigraphy and snow sampling. Shallow coring and temperature measurements were also performed.

F-21533

Drewry, D.J., Meldrum, D.T., **Radio echo sounding of the antarctic ice sheet, 1977-78,** *Antarctic journal of the United States*, Oct. 1978 13(4), p.52-53, 11 refs.

A total of 141 flight hours were flown during 13 radio echo sounding missions in Antarctica between Jan. 13 and 23, 1978. Sounding was achieved along 25,000 km. Investigations were carried out in the International Antarctic Glaciological Project area, in West Antarctica, and in the Ross Ice Shelf Project area. The first large sub-ice lake in West Antarctica was detected along the western flank of the Ellsworth Mountains. The water body is at least 13 km in extent occupying a bedrock hollow beneath 3,500 m of ice. Several smaller lakes were also identified. Other investigations include studies of layering in East Antarctica: studies of birefringence and thus

anisotropy of the dielectric constant of radar wave propagation in ice sheets; sounding behind the McMurdo dry valley area indicating the presence of sub-ice water, moraines, and a local ice surface dome; estimation of the heat flux through the base of an ice sheet; and study of the relative chronology between formation of ice sheets in East and West Antarctica.

F-21534

Whillans, I.M., **Glaciology near Byrd Station,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.53-54, 6 refs.

The dynamics of ice flow along the Byrd Station strain network, and the interpretation of the Byrd Station core results are discussed. It is found that the ice sheet near Byrd Station has been flowing in a simple, nearly steady-state fashion for some tens of thousands of year. Although the ice sheet is close to steady-state, it is thinning slowly, at a rate of little more than 0.03 m/yr. This is attributed to a warming effect of about 8C which took place 14,000 yr ago. Because the tilting of the Byrd Station core hold has been measured, it is now possible to model the ice flow and to calculate the depth-age relationship for the core with some reliability. Variations in snow accumulation on the ice sheet near Byrd Station have been analyzed statistically.

F-21535

Clough, J.W., **Ross Ice Shelf Project 1977-78,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.54.

The 1977-78 Ross Ice Shelf Project (RISP) field season was marked by two major achievements: penetration of the ice shelf at the RISP drill camp J-9 and completion of the Ross Ice Shelf Geophysical and Glaciological Survey (RIGGS).

F-21536

Browning, J.A., Somerville, D.A., **Access hole drilling through the Ross Ice Shelf,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.55.

Two access holes were drilled through the 1,380-ft ice thickness of the Ross Ice Shelf, using a flame-jet drill powered by an internal burner whose reactants are compressed air and fuel oil provided at high pressure. The drilling equipment and procedures used are described. The diameter of one of the holes showed large irregularities over the entire hole length. Reasons for the formation of these irregularities are not understood. It is considered doubtful that flame drilling beyond 3,000 ft in solid ice is practical.

F-21537

Thomas, R.H., MacAyeal, D.R., **Glaciological measurements on the Ross Ice Shelf,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.55-56, 6 refs.

Field work to complete the Ross Ice Shelf Geophysical and Glaciological Survey (RIGGS) was to involve remeasurement of 82 Kehle-type strain rosettes planted the previous season in a grid pattern on the ice shelf. It was further planned to remeasure detailed strain networks along two 40-km lines near camp C-6 and along a 35-km line on Crary Ice Rise. Precise position fixes were to be made at grid stations using a Geoceiver. Most of the work was accomplished following major delays.

F-21538

Greischar, L.L., Shabtaie, S., Albert, D.G., Bentley, C.R., **Ross Ice Shelf Geophysical survey, 1977-1978,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.56-59, 11 refs.

The geophysical program on the ice shelf began with gravity and radar sounding profiles and a seismic-surface-wave experiment at station Q-13. During the last week of Dec., five remote field sites were occupied with support of the Twin Otter airplane. Gravity measurements, radar sounding of ice thickness, and seismic sounding of water depth beneath the ice were made at all sites. In addition, studies of seismic and radio-wave velocities within the ice shelf were made at two of these sites and an electrical resistivity profile was completed at one. Early in Jan. airborne radar sounding was made along 1,800 kilometers of flight lines. The measurements are described.

F-21539

Chiang, E., Langway, C.C., Jr., **Antarctic ice core recovery,** *Antarctic journal of the United States.* Oct. 1978 13(4), p.59-61, 9 refs.

As part of the Polar Ice Core Analysis Program ice cores were obtained from sites Q-13, C-16, J-9, on the Ross Ice Shelf, and South Pole. These cores and other samples were collected to permit further investigation of the seasonal variation in sea salt concentrations, delineation of aerosol sources by chemical analysis, and assessment of the factors influencing the variations in the physical characteristics of the ice at these and other selected sites. In addition to the ice cores, snow and ice samples were collected from the ice towers near the summit of Mt. Erebus and also on the Ross Ice Shelf for preliminary investigations of the dispersion of aerosols emitted in the Mt. Erebus plume toward the shelf. Surface-to-core tie-in studies were conducted in the vicinity of each site, and measurements were made of core density, stratigraphy, and corehole temperature.

F-21540

Holdsworth, G., Holdsworth, R., **Erebus glacier tongue movement,** *Antarctic journal of the United States.* Oct. 1978 13(4), p.61-63, 3 refs.

Ice deformation measurements were made on the Erebus Glacier Tongue, McMurdo Sound, in an attempt to support the hypothesis that, as a result of ocean wave excitation, a floating glacier may oscillate at a frequency that corresponds to one of its higher modes. Under storm conditions with open water, the amplitude and duration of vertical oscillations may be caused by the bending stresses in the resonant-like motion that cause fatigue failure in the ice. Other measurements included density, temperature, ice thickness, and water depth.

F-21541

Amos, A.F., **Green iceberg samples in the Weddell Sea,** *Antarctic journal of the United States.* Oct. 1978 13(4), p.63-64, 2 refs.

A green and white iceberg was observed and sampled in the eastern Weddell Sea from ARA Islas Orcadas cruise 15 in Feb. 1978. The bulk of the iceberg was comprised of bluish-white, opaque ice that was horizontally stratified but had a rougher top surface than a typical tabular iceberg. The "abnormal" portion of the iceberg was a deep green color, appearing almost black in certain light. The iceberg was estimated to be about 20 m high, 100 m long, and 40 m wide and was tilted at an angle of approximately 35 deg. The green "outcrop" stretched along the entire side that was tilted downward and extended beneath the sea surface. The maximum height of green ice above the surface was approximately 14 m. Results of analyses of the iceberg sample are presented. None of the results so far can be used to postulate an origin for the green iceberg.

F-21542

Parkinson, C.L., Rayner, J.N., **Numerical model of antarctic sea ice,** *Antarctic journal of the United States.* Oct. 1978 13(4), p.65-67, 4 refs.

A large scale numerical model, developed to simulate the annual cycle of sea ice in the Southern Ocean, is described. The model employs a 41 by 41 rectangular grid with 200-km horizontal resolution, an 8-hr timestep, and four vertical layers: ice, snow, ocean, and atmosphere. Both thermodynamic and dynamic processes are incorporated and there is an allowance for leads. The model is run for a

4-yr simulation period, allowing sufficient time for the yearly cycle to reach an approximate equilibrium. Although the model produces some satisfactory results on a large scale, smaller scale features such as the observed tendency for thicker ice at the northern reaches of the Weddell Sea than at the Weddell Sea coast are generally not reproduced. The results, however, demonstrate the feasibility of including sea ice in global models of the atmosphere and/or oceans.

F-21543

Goodman, D.J., Holdsworth, R., **Continuous surface strain measurements on sea ice and on Erebus Glacier Tongue, McMurdo Sound, Antarctica,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.67-70, 12 refs.

These investigations included measurement of the flexural wave energy on the sea ice close to the Erebus Glacier Tongue, monitoring of the surface strain changes on the glacier itself, and measurement of continuous surface strain (in a frequency range between 1 hertz and d.c.) close to the annual runway on the sea ice close to McMurdo Station as LC-130 transport planes landed and vehicles passed along the ice road to the runway. Strains were measured continuously to an accuracy of 1 in 100,000,000 strain, over a 5-m gage length with a geophysical wire strainmeter. Typical examples of the data obtained are presented and discussed.

F-21544

Ackley, S.F., Taguchi, S., Buck, K.R., **Sea ice and ice algae relationships in the Weddell Sea,** *Antarctic journal of the United States,* MP 1203, Oct. 1978 13(4), p.70-71, 7 refs.

Analysis of data obtained during a 1977 cruise in the Weddell Sea indicates that the ice algal community found during that cruise is distinct from others that have been described (for example, the bottom epontic community in the land-fast ice in McMurdo Sound, the surface communities off East Antarctica, and the bottom communities in Arctic Pack ice.) Unlike these other communities, the Weddell pack algae is dominantly an interior one, existing not at the surface or bottom but at mid-depth (.65 to 2.15 m) within the ice. The formation of this community is dependent on the unique thermal and physical setting for Weddell sea pack ice. Brine drainage processes are initiated by summer warming, but are not carried through to completion as in the Arctic. This process causes a redistribution of salinity, maximizing in the mid-depth regions of the ice and apparently leading to algae production because of the relatively higher nutrient levels at these mid-depths. A qualitative model indicating the relationship between the thermally induced brine migration and subsequent algae growth is given.

F-21672

Warburton, J.A., Linkletter, G.O., Owens, M.S., **Role of precipitation processes in chemistry of polar snows,** *Nevada. University. Desert Research Institute. Technical report,* [1976] Ser. P, No.18, Report on polar meteorology workshop, Reno, Nevada, 1975, edited by J.A. Warburton, p.104-107, 2 refs.

DLC GB611.N4

Preliminary study of replicated snow crystals in Antarctica indicates that the relative proportions of diffusional and accretional growth change with distance from the ocean, with diffusional processes becoming dominant in the more inland regions. It was proposed that variations in the chemistry of antarctic snow and ice may in part be accounted for by the temporal and spatial distribution of the atmospheric growth mechanisms of snow. These phenomena were investigated at two camps on the Ross Ice Shelf. The first results of analysis comparing relationships between precipitation processes and snow chemistry in time and space are presented in tables. The ratios shown are indicative of normal sea water values for the coastal stations. Further inland the ratios show evidence of enrichment in K and Mg. Apparently significant enrichment is occurring in specific precipitation types and depends on the type, e.g., water droplets, accreted ice crystals, and diffusional growth crystals.

F-21695

Kotliakov, V.M., **Glaciology in Antarctica on the eve of the 1980's** [Gliatsiologiia Antarktidy na rubezhe 80-kh godov XX v.], *Antarktika: doklady komissii,* 1978 No.17, p.111-124, In Russian. 14 refs.

Antarctic glaciology in the last 10 years is reviewed. During this time there has been a shift from complex studies carried out by individual countries to international projects. The article discusses the major one: International Antarctic Glaciological Project—its aims, the area under study, methodology, the Soviet role, and main results to date. The disposal of radioactive waste by burying it in Antarctica is considered but rejected. Antarctic mass balance is estimated and some problems affecting precision of such estimates are discussed. The possibilities either of catastrophic collapse of the West Antarctic ice sheet or of massive surges are touched upon. Suggestions for further glaciological research in Antarctica are offered.

F-21696

Bardin, V.I., **Paleoglaciology in Antarctica** [O probleme paleogliatsiologii Antarktidy], *Antarktika: doklady komissii,* 1978 No.17, p.125-131, In Russian. 28 refs.

The results of paleoglaciological research in Antarctica are reviewed. Studies of the complex of moraines of various ages in Victoria Land, Dronning Maud Land and Mac. Robertson Land have shown definite similarities in main glacial events among these regions and have proved that the East Antarctic ice sheet, at least after it reached its fullest extent, developed as one entity and underwent three great cyclical oscillations. Comparative lithological and morphological descriptions of moraines and glacial sediment dating have led to a correlation of the glacial events in various parts of Antarctica and to an understanding of the general course of East Antarctic Cenozoic glaciation.

F-21715

Tabler, R.D., **Visibility in blowing snow and applications in traffic operations,** *Neve international,* Sep. 1978 22(3), p.32-39, 6 refs. Presented at the Symposium on Driver Visibility under Varying Adverse Weather Conditions, Portland, Oregon, Aug. 1977.

In connection with the testing of operational applications of a visual range monitor developed at the Rocky Mountain Forest and Range Experiment Station, this paper presents results of experiments exploring the relationship between wind and visibility, with emphasis on changes accompanying snow cover depletion, and shows how this information is used for traffic operations. Results of antarctic studies relating particle size in blowing snow to wind speed are cited and shown in a diagram.

See also:
A-19737 A-19862 A-20272 A-20289 A-20321 A-20323 A-20983 A-21175 B-19552 B-19609 B-19614 B-19616 B-19978 B-19979 B-19982 B-20035 B-20036 B-20037 B-20040 B-20042 B-20878 B-20892 B-20937 B-21279 B-21516 B-21601 B-21602 B-21605 C-19500 C-19502 C-19503 C-19504 C-19505 C-19579 C-21083 C-21393 E-19259 E-19271 E-19286 E-19325 E-19374 E-19551 E-19578 E-19644 E-19666 E-19868 E-19916 E-19917 E-19919 E-19920 E-19999 E-20008 E-20009 E-20156 E-20180 E-20309 E-20405 E-20692 E-20757 E-21005 E-21104 E-21338 E-21384 E-21525 E-21527 E-21529 G-19327 G-19355 G-19409 G-19487 G-19732 G-19759 G-19984 G-20739 G-20748 G-20750 G-20776 G-20815 G-20817 G-20856 G-20904 G-21152 G-21206 G-21643 I-19343 I-19344 I-19491

I-19697 I-19700 I-19701 I-19707 I-19735 I-19816 I-19826
I-19941 I-20082 I-20105 I-20150 I-20169 I-20202 I-20426
I-20823 I-20859 I-20957 I-21077 I-21106 I-21109 I-21110
I-21186 I-21187 I-21188 I-21189 I-21191 I-21377 I-21385
I-21467 I-21609 I-21611 I-21616 I-21620 J-19621 J-19781
J-20022 J-20026 J-20028 J-20032 J-20034 J-20203 J-20328
J-20706 J-20740 J-20784 J-20991 J-21097 J-21098 J-21545
J-21710 L-19651 L-19823 L-19855 L-20696

G. LOGISTICS, EQUIPMENT & SUPPLIES

G-19327

Angino, E.E., **High-level and long-lived radioactive waste disposal,** *Science,* Dec. 2, 1977 198(4320), p.885-890, 26 refs.

No uniform international approach for handling the problem of high-level radioactive waste disposal exists. Meanwhile, the volume of these wastes continues to grow. A summary of geologic waste disposal methods and the technological feasibility of each is given: storage in geologic formations, burial in the antarctic ice sheet or in the ice-free areas of Antarctica, and seabed disposal. All of the methods require considerable research to assess the permanence of the burial, the safety and environmental effects, the retrievability, and long-term (that is, tectonic) stability of the storage areas. Burial of these wastes in solid form for long periods of time in mined cavities in salt or Precambrian crystalline rock formations is technically possible. Several steps in the burial process have already been demonstrated in Germany and the U.S.

G-19348

Bird, I.G., Foster, A.L., **Radar as an aid to surface navigation in Antarctica,** *Polar record,* Sep. 1977 18(117), p.607-609.

The experience gained in the field from 1971 to 1975 using radar for surface navigation is reported. The low cost marine radar systems ('Furuno' model FRA-10) proved particularly useful in blizzards, ice-fog, drifting and snowing conditions. It was also found that the problem of locating fuel dumps, vehicles, and unmanned observatories is considerably eased with the aid of radar. In marginal situations with small targets, visual integration of stationary echoes on the display screen allows an experienced operator to detect echo returns well below the noise level. The radar systems performed satisfactorily in temperatures down to approx -35C.

G-19355

Philberth, K., **Nuclear energy risks and nuclear waste disposal in ice** [Atomkernenergie-Risiken und Atommüll-Deponierung im Eis], *Polarforschung,* 1976 46(2), p.106-120, In German. 108 refs.

Problems of radiation risks resulting from nuclear energy production are reviewed. The disposal of short-lived isotopes can be handled within the plant; long-lived isotopes have low decay activity and therefore low toxicity. Serious problems are presented only by isotopes with intermediate half-lives (30 years for Sr-90 and Cs-137). These can be safely deposited in polar ice sheets, as computations show that undisturbed storage for 500, and probably 1,000 years is assured.

G-19359

Monteath, C., **Waste not left behind at Scott Base,** *Antarctic,* Sep. 1977 8(3), p.101-102.

The disposal or recycling of waste properly has become an increasing problem to all who work on the Antarctic Continent. Each year now New Zealand Antarctic research program staff are briefed at their training courses on the disposal problem and the sorting system in use at Scott Base. Separate bulk containers are used at the base for metals, plastics, glass, burnables, acids, etc. A Harco industrial incinerator has been installed to handle all burnable material. For human waste a formaldehyde chemical toilet system pipes effluent straight into the tide crack. This is permissible as a result of a recommendation made at the Oslo meeting in 1975. Glass, batteries, acid, and some metals, where possible, are returned to manufacturers or recycling plants in Canterbury. Aluminum, rubber, tin cans and plastics are still dumped locally.

G-19367

Kehler, W.F., **Aluminum home for researchers** [Aluminiumheim für Forscher], *Schweizer Aluminium Rundschau,* 1977 27(1), p.11-15, In German and French.

The 50 m diameter geodesic dome erected at the new South Pole Station by the U.S. Navy Facility Engineering Command is described in detail and illustrated with drawings and with photographs provided by the U.S. Navy. The chronology of the construction work is outlined.

G-19368

Kovacs, A., Abele, G., **Runway site survey, Pensacola Mountains, Antarctica,** *U.S. Army Cold Regions Research and Engineering Laboratory,* SR 77-14, June 1977, 45p., ADA-051 814. 6 refs.

Two blue ice areas were surveyed in the Pensacola Mountain region of Antarctica and found suitable for runway sites. A length of 2.5 to 3 km, oriented in the predominant wind direction, is available at Rosser Ridge, requiring very little snow removal. A length of 3 km, oriented at 30 deg to 45 deg with the predominant wind direction, is available at Mt. Lechner, but considerable snow removal would be required, and some obstacles are present near both ends of the runway area. Aerial inspection disclosed one and probably two more suitable sites near the Patuxent Range.

G-19409

Botnikov, V.N., Maksutov, D.D., **Unloading of an IL-14 aircraft onto a giant iceberg,** Soviet antarctic expedition bulletin, Vol.92, 1976: selected articles. CRREL TL 654, Hanover, New Hampshire, U.S. Army Cold Regions Research and Engineering Laboratory, 1977, p.35-37, ADB-022 850L, For Russian original see G-17635.

In the summer of 1973/74 the *Vasilii Fedoseev* was unable to approach Molodezhnaya Station because of extremely severe ice conditions. She was carrying an IL-14 for delivery. A search began for a large, flat iceberg to be used as a combination receiving dock and takeoff area. A suitable berg was found, the plane was offloaded, assembled and flown to Molodezhnaya rather than being unloaded there. The sea around Molodezhnaya and Mirnyy is particularly rich in such large flat bergs, fortuitous alternatives in difficult cargo operations.

G-19442

Muto, A., **Living conditions during the antarctic winter** [Nankyoku ettoji no seikatsu kagaku], *Antarctic record,* 1963 No.17, p.72-73, In Japanese.

Clothing and food for the JARE group are discussed for 4 locations: on board ship, at Showa Station, on traverse, and at a field station. Requirements for clothing in these various circumstances are outlined and the types of garments are described. Nutrition in the field required 3,700 calories per day, at the station, 3,300-3,450. Vitamin supplements were included.

G-19445
Hara, M., **Nutrition and food supply in Antarctica** [Nankyoku ni okeru eiyo to shokuryo], *Antarctic record,* 1963 No.17, p.73, In Japanese.

The Committee on Medical Science and Practice on the Special Committee on Antarctica has recommended the following nutritional levels for personnel stationed there: 3,500 cal/day; at least 110 g protein/day; at least 50 g of fat/day; 10,000 IU vitamin A; 600 IU vitamin D; 5 mg B1; 5 mg B2; 120 mg vitamin C. During severely cold periods these rations should be tripled. A selection of 500 types of food was suggested, a mixture of Japanese, Chinese and Western items; however, this list was pared to somewhat over 300 items selected for quick and easy cooking, suitability for transport, etc.

G-19487
Mellor, M., **Controlled perimeter blasting in cold regions,** *U.S. Army Cold Regions Research and Engineering Laboratory,* TR 267, Oct. 1975, 24p., ADA-047 367, 15 refs.

The general principles of pre-split blasting and smooth blasting are described, and practical procedures that have been developed for work in common rocks are reviewed systematically. The topics covered include shothole spacing, charge weight per unit length of shothole, decoupling ratio, adjustments for explosive type and rock type, and weight of explosive per unit face area. Relevant properties of frozen rocks, frozen soils, and ice are compared with those of common unfrozen rocks, and appropriate adjustment of blast design is discussed. Interim relationships for the design of controlled perimeter blasting in frozen soils and massive ice are put forward, recognizing that additional experimentation is required. Special problems in controlled blasting of ice are discussed. These include effects of wet holes, delayed removal of burden, and submerged burden. Special attention is given to the cutting of ice islands and icebergs. An Appendix describes an operation in which the face of the ice wharf at McMurdo Sound was trimmed by pre-split blasting.

G-19489
Renzetti, J.L., **Dismantling McMurdo's reactor,** *Navy civil engineer,* Spring 1977 28(1), p.26-27, 45.

The PM-3A Nuclear Power Plant at McMurdo was shut down in Sep. 1972 and a decision was made to dismantle the plant after discovery of a potential reactor piping corrosion problem. Planning for the dismantling, which began in Mar. 1973, called for the project to be completed over a three-year period. Details of the planning and the dismantling process are given. The first phase began in early Oct. 1973 with the removal of plant components, a procedure requiring the performance of several unique underwater cutting operations. Most of the dismantling took place during the second phase when the reactor buildings and the five steel reactor containment tanks were removed. Major projects during the third year of operations, which began Oct. 16, 1975, included removal of the condenser building and final site cleanup. Following this operation a comprehensive radiological survey of the site was made. During the three Deep Freeze austral summer seasons, some 900 tons of radioactive waste and 115 tons of noncontaminated retrograde were removed from the PM-3A site. The material was shipped to CONUS where it was off-loaded and trucked to a licensed radioactive waste disposal site.

G-19674
Angino, E.E., Zeller, E.J., **Burial of high level radioactive wastes,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.125, 6 refs.

Investigations related to the concept of burial of high level radioactive wastes in Antarctica reveal a shift from consideration of effects of burial beneath or in the ice sheet of East Antarctica to a review of geological considerations pertaining to burial in ice-free area. It is suggested that the Antarctic be considered on an equal basis with any other international site.

G-19726
Betzel, A.F., **Conceptual design of a polar research ship,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.203-204.

The characteristics of a new polar research ship designed for arctic operation with a lengthened version for the Antarctic are described. The conceptual design has been successfully reviewed. The ship has an ice-strengthened hull, a 3,700-hp power plant, and is equipped for stern trawling, coring, dredging, and hydrographic stations. It has an antiroll flume tank just below bridge level and a bow thruster for maneuvering on station. The crew of 17 can support a science party of an equal number or greater. Tie-down deck vans and bolt-on-deck equipment will enable the ship to support a wide variety of scientific tasks both in and out of ice. The estimated cost of the arctic version is between $11.5 and $13 million expressed in Apr. 1977 dollars. The cost of the lengthened antarctic version is $0.5 million more. These cost figures do not include fitting out the ship with deck and science equipment.

G-19727
Dudley-Hart, P., Yung, A., Parodi, R., **Improvement of scientific systems aboard ARA *Islas Orcadas,*** *Antarctic journal of the United States,* Oct. 1977 12(4), p.205-206, 2 refs.

This article describes improvements made in the scientific systems aboard *Islas Orcadas* to return the ship to its pre-1972 capability. New equipment was installed for the navigation system, for bathymetry and geophysics investigations, and for the physical oceanography program. The vessel's geological equipment, net and dredge inventories, and computer center remain unchanged from the *Eltanin* configuration with the exception of installation of a new engine in the core winch.

G-19729
Kosar, W.S., **Research-configured LC-130R airplane,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.206-207.

A logistics LC-130R airplane has been modified to incorporate a science capability. The modifications include installation of sensor probes and apertures and a pallet-mounted data logging system called the Airborne Research Data System (ARDS). Trial flights with the ARDS were successfully conducted in Antarctica in Jan. 1977. Data recorded during the test flights are shown, and the design of the serial digital partyline data logging system is described. Since the airplane is used mainly for antarctic logistics, its use for scientific purposes each year will be limited, and therefore, must be closely planned and scheduled. Instructions for submitting requests for use of the plane are outlined.

G-19730
Murphy, R.L., **Contractor support,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.207-208.

During the 1976-77 austral summer Holmes & Narver, Inc. deployed 118 employees to Antarctica to work on their two support contracts with the National Science Foundation. The company provided support for 293 science grantees embarked on 85 scientific research programs and provided support services to 28 special visitors and 20 officials of NSF. The projects supported included construction of camp J-9 on the Ross Ice Shelf, a facelifting operation and completion of the Mammoth Mountain Inn berthing facility at McMurdo, rehabilitation of 14 Porta Kamp units and construction of a new head and galley complex at Williams Field, preparation of Siple Station for summer occupation, construction of a new clean air facility and a tower for cosmic ray measurements at South Pole station, and

erection of two prefabricated huts at Palmer and installation of high-powered radio transmitters. The British vessels *John Biscoe* and *Bransfield* resupplied Palmer Station and *Hero* called at South Georgia I. Construction should start during the 1977-78 season on a replacement for Siple Station, and design is proceeding on a facility to support 155 Naval Support Force and Squadron Six personnel at Williams Field.

G-19731
Desko, D.A., **Air operations, *Deep Freeze* '77,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.209-210.

Air operations in support of *Deep Freeze* '77 are summarized. During the season, the squadron's four LC-130's flew 3,381 flight hours in 627 sorties and the UH-1N aircraft flew 668 flights totalling 1,119 flight hours, transporting cargo, fuel, and passengers. The last of the LC-130's downed at dome C was recovered and flown to Lake City, Fla. for overhaul. The first Atmospheric Research Data Systems flight was made between McMurdo and South Pole station. Other significant flights included photomapping at Darwin Glacier, a simulated aircraft accident search and rescue flight, closing of camp J-9, the first LC-130 landing at Druzhnaya, and a flight to the South Pole which dropped a pararescue team.

G-19732
Swyers, H.M., **Public works, *Deep Freeze* '77,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.210-211.

Completion of an ice wharf in Winter Quarters Bay, relocation of Williams Field skiways and tower, interim William Field construction, a second year of aircraft recovery work at dome C, and earthmoving highlighted public works during *Deep Freeze* '77. The skiway was relocated approximately 1,200 m farther from the edge of the McMurdo Ice Shelf. The new skiway location, expected to be useable for 10 yr, will be the site of the new Williams Field complex to be constructed during *Deep Freeze* '79 and '80. The ice wharf generally lived up to expectations and appears capable of lasting three to five more seasons.

G-19733
Bellafronto, R.L., **Aircraft salvage at dome C,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.211-212.

Details of the plans and salvage operations employed to recover the third airplane (LC-130 319) damaged at dome C are given. The repair and recovery was a cooperative effort shared by the Naval Support Force, Antarctica, VXE-6 personnel, technicians from the Naval Air Rework Facility (NARF), and Lockheed-Georgia Co. engineers. The original concept called for erection of 21 m of industrial scaffolding completely across the aircraft, above the center wing section to enable removal of the wing. To simplify this operation, a 6-m-wide by 2-m-deep by 60-m-long trench was carved in the snow surface and the airplane was towed into the trench. This innovation reduced the height of the scaffold and greatly simplified erection. The aircraft was certified ready for flight on Dec. 23 and returned to McMurdo Station on Christmas Day.

G-19734
Eckman, J.F., **Ship operations, *Deep Freeze* '77,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.212-213.

The U.S. Antarctic Research Program was supported during *Deep Freeze* '77 by the Wind-class icebreakers USCGC *Burton Island* and USCGC *Northwind.* The supply ships were the tanker, USNS *Maumee* and the dry cargo ship USNS *Schuyler Otis Bland.* This was the first *Deep Freeze* operation for the *Bland.* The ships' operations are summarized. *Bland's* cargo included 7,831 metric tons of slightly irradiated soil and rock from the area of the disestablished nuclear power plant at McMurdo Station. This operation presented two problems of note. It was loaded from dump boxes as bulk cargo in the ship's holds, and the long time it took to do this allowed *Bland's* water discharge to erode the ice wharf.

G-19754
Voelker, R.P., **Operational capability of a polar research ship,** International Conference on Port and Ocean Engineering Under Arctic Conditions, 4th, St. John's, Sep. 26-30, 1977, Memorial University of Newfoundland, 1978, p.464-474, 2 refs.

Based on the projected development in the Arctic regions and the corresponding lack of adequate oceanographic data in this area, the need for a research ship capable of operating in ice-covered waters has recently been established. The performance requirements for a research ship which would fulfill these needs includes the capability for breaking up to 0.46 m of level ice at a speed of 3 knots. As ice conditions in the polar regions vary as a function of time, it was decided to determine the operational limits of the ship for different geographic areas as a function of calendar month. This paper presents the results of that operational study for Arctic East, Arctic West, and Antarctica.

G-19757
Warburton, J.A., Schwalenberg, E., Kleppe, J.A., **Use of an X-band radar and satellite communications link for studies of air-sea interactions on the Antarctic Peninsula,** International Conference on Port and Ocean Engineering Under Arctic Conditions, 4th, St. John's, Sept. 26-30, 1977, Vol.2, Memorial University of Newfoundland, 1978, p.1064-1073, 6 refs.

A weather radar system installed at the Palmer Station, Antarctica is being used to study mesoscale atmospheric-ocean interactions on the Antarctic Peninsula. This paper describes the design, fabrication and testing of this radar system and of a VHF satellite communications system between Antarctica and Reno, using transponders aboard NASA ATS-1 and ATS-3 satellites. Communications have been made using ground stations at McMurdo (via ATS-1) and Palmer Station (via ATS-3). The results obtained to date clearly demonstrate that high quality communication links are possible at the higher latitudes for the transmission of voice, digital data and facsimile. Information on weather systems, sea-ice movement and air-sea interaction phenomena, based upon some of the initial radar observations is also presented. (Auth.)

G-19759
Philberth, K., **Disposal of radioactive waste in ice sheets,** *Journal of glaciology,* 1977 19(81), p.607-617, In English with French and German summaries. 34 refs.

The waste containers should be retrievable for a few centuries until further research has solved all problems and Sr-90 and Cs-137 have decayed to less than 0.1%. Safe and fairly cheap retrievability can be guaranteed without container mooring. The paper presents an example: The high-level waste of the whole world for the next 30 years could be put into 30 million spherical containers with 0.2 m radius and disposed of in an area with 15 km radius and a depth range of 20-100 m under the surface of either the Antarctic or the Greenland ice sheet. The deposit does not affect the stability of the sheet. Even the most upsetting natural ice-sheet instabilities and/or climate changes could not cause radioactive contamination. (Auth.)

G-19765
Shimasue, T., **Immortal *Soya*--antarctic research vessel** [Soya to eikyu ni], *Polar news,* Jan. 1978 No.26, p.21-25, In Japanese.

The *Soya* was the antarctic research vessel provided by the Maritime Safety Agency of Japan. The author, past director of that

agency, recalls activities of the ship throughout the period of the first JARE.

G-19766
Matsumoto, M., **Navigation of *Soya* in the Antarctic Ocean** [Soya o soju shite], *Polar news*, Jan. 1978 No.26, p.26-29, In Japanese.

Soya operations in the Southern Ocean during the first JARE are described. She became trapped in pack at one time and the experience gained in these early voyages aided greatly in the construction of Japan's first icebreaker, the *Fuji*.

G-19769
Murayama, M., **Reopening of Showa Station** [Nankyoku saikai no ura omote], *Polar news*, Jan. 1978 No.26, p.43-47, In Japanese.

Showa Station was closed from Feb. 1962 to Jan. 1966. During this period the new icebreaker *Fuji* was constructed, capable of carrying about 240 men and 500 tons of cargo and equipped with two Sikorsky and one Bell helicopter. An oversnow traverse operation from Showa to the South Pole is described, as well as the development of the KD60 oversnow vehicle used by the traverse party. Showa reopened with the 7th JARE, its staff exchanged visits with other teams stationed in Antarctica, and work resumed. The author led that team and recounts its activities.

G-19771
Takeshita, T., **Science Council of Japan and the JARE** [Nankyoku kansoku jigyo no hajime no koro no koto], *Polar news*, Jan. 1978 No.26, p.51-54, In Japanese.

The author recounts the events resulting in the first JARE. He describes how the proposal was approved by the IGY scholars, how the Asahi Newspaper Co. promoted the idea, how the expedition leaders were selected, and how the first training camp was organized.

G-19772
Honda, T., ***Fuji's* maiden cruise** [Fuji no katsudo], *Polar news*, Jan. 1978 No.26, p.55-57, In Japanese.

In 1964 the launching of the new icebreaker *Fuji* made possible the reopening of Showa Station, the Japanese post that had had to be abandoned four years earlier. She has continued to provide support for the JARE ever since and her useful life is expected to be far from over. Her capabilities and activities on her maiden voyage are described.

G-19865
U.S. Coast Guard, Farmer, R., **Deep Freeze 1978 cruise report**, San Francisco, 1978, 45p.

This is the cruise report of the U.S. Coast Guard cutter *Burton Island*, which sailed from San Francisco with a crew of 13 permanently assigned officers and 174 enlisted men. She also carried personnel for the scientific projects in which she was involved: SRI atmospheric projects; Texas A & M Drifter Buoy Project; Point Reyes Bird Observatory Project; Lamont-Doherty Ross Sea Project; Univ. of California (Davis) Ross Sea Project; and Scripps Institute Ross Seal Project. Cargo operations were conducted for a number of mainland and island bases, repair and maintenance for the ship carried out, and escort operations and channel clearing work engaged in.

G-19887
Dubovtsev, V.F., **Conditions for ship unloading near Novolazarevskaya Station** [Usloviia vygruzki transportnykh sudov v raĭone stantsii Novolazarevskoĭ], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten'*, 1977 No.96, p.35-40, In Russian. 2 refs.

Ship-to-shore cargo transfer at four locations near Novolazarevskaya Station is discussed. Unloading is complicated by high winds, the danger of spring ice breakup, and the high ice barrier which is difficult to negotiate with loaded oversnow vehicles. High winds and poor visibility hindered the use of helicopters. Several recommendations are made based on the experience reported: ships in the *Ob* class should be unloaded at Leningrad Bay from the end of March through early April. Accurate weather forecasting (especially of storms), ice forecasting, and use of icebreakers are all essential to successful and safe cargo operations here.

G-19893
Shumilov, I.A., Kosterin, I.N., **Propagation of shortwave time signals over long-distance radio links** [Rasprostranenie korotkovolnovykh signalov tochnogo vremeni na radioliniiakh bol'shoĭ protiazhennosti], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten'*, 1977 No.96, p.72-76, In Russian. 5 refs.

Long-distance shortwave radio communication, used for transmitting exact-time signals for synchronization of various observations, are discussed in terms of accuracy. Three pairs of stations exchanging signals are studied: Moscow-Molodezhnaya; Novosibirsk-Molodezhnaya; and Irkutsk-Molodezhnaya. The data, presented here in tables, indicate that the error is very small—on the order of less than 4 milliseconds—and can be considered to fall within acceptable limits.

G-19949
Buenos Aires. Instituto Antártico Argentino. Dirección Nacional del Antártico, **Scientific station Almirante Brown** [Estación científica Almirante Brown], Buenos Aires, Feb. 1973, 15p.

Brown Station is briefly described and then pictured in a number of black-and-white photos. Equipment is listed and much of it, the inside of the laboratories, and a few procedures on the Weddell seal are shown.

G-19951
Buenos Aires. Instituto Antártico Argentino. Dirección Nacional del Antártico, **LABEL, Upper Atmosphere Physics Laboratory, General Belgrano Station,** Feb. 1973, 8p.

This pamphlet briefly describes the equipment used for upper atmosphere physics research at Belgrano and then shows some of the major components in large black-and-white photographs.

G-19960
Day, C.F., **Cost of U.S. antarctic research,** Bethesda, Md., Resource Management Corporation, Nov. 1971, 89p., UR-169, Incl. tables and append.

Using cost data from three sources—Navy funded costs for logistics support, NSF grants and contracts, and Coast Guard costs for ice breaking—RMC attempted to identify costs for the U.S. Antarctic research effort. These figures necessarily reflect the expense not only of work done in the Antarctic, but of administrative and scientific support, supply and transportation costs and other expenditures in the United States, New Zealand and elsewhere.

G-19984
Zeller, E.J., Angino, E.E., **Disposal of radioactive wastes in the antarctic ice sheet: an environmental impact assessment,** Environmental impact in Antarctica, edited by B.C. Parker, Blacksburg, Virginia Polytechnic Institute and State University, 1978, p.279-294, 8 refs.

The antarctic ice sheet is believed to present the best opportunity for disposal of high-level radioactive wastes from both a political and technical viewpoint, in spite of the fact that the transportation logistics may be difficult. Preliminary studies indicate no identifiable unsolvable problems in achieving safe permanent waste storage. Waste containers could be placed on the surface and allowed to melt their way through the entire thickness of the sheet to the ice-rock interface, or they could be tethered so that they would sink to a predetermined depth where they would remain as part of the moving ice sheet. Alternative methods include disposal in salt beds in countries where they exist, storage in concrete structures built above ground in locations such as the dry valleys, and burial in bedrock tunnels in mountain ranges in the interior of Antarctica. The advantages and shortcomings of all of these methods are examined. The environmental impact of the proposed antarctic ice disposal plan would probably result in a two- to five-fold increase over that currently caused by the multinational exploration programs. The impact of the various phases of the proposed ice disposal plan in relation to air, sea, and land is considered.

G-20061

Calhoun, J., **South Pole approach,** *Naval aviation news,* Apr. 1978, p.33.

A brief commentary is made on the Air Traffic Control Facility at the Pole. The total complement of the facility is two men, one air traffic controller and one electronics technician. The equipment consists of FPN-36 quad radar, combined radar room and control tower, UHF radio beacon and various communications systems. The landing field is a skiway carved out of the harsh terrain and far removed from an alternate landing site. Selection for such an assignment represents the highest form of respect for a man's ability to work without assistance and supervision.

G-20208

Valentine, G.C., **Polar logistic support: the United States Navy,** Polar research: to the present, and the future, edited by M.A. McWhinnie, Boulder, Colo., Westview Press, 1978, p.231-262, 8 refs.

The role of the U.S. Navy in the history of man's exploration and investigation of the polar regions and its continuing efforts in behalf of defense-related research in the Arctic and logistic support of the U.S. research programs in Antarctica are discussed. Support activities conducted on behalf of science in the Antarctic include station construction and operation, ship operations, air operations, and providing meteorological data for world-wide use. One of the more challenging endeavors to be recorded in naval aviation history was the successful recovery during *Deep Freeze* 76 of two of three damaged aircraft downed at Dome C, and recovery of the third during *Deep Freeze* 77. All three aircraft were returned to active support operations.

G-20256

New installations at the southern end of the world [Nuevas instalaciónes en el confín austral del mundo], *Antártida,* June 1975 No.6, p.22-23, In Spanish.

A geodesic dome has been constructed over the Amundsen-Scott Station. 15.6 meters high, the dome is intended to protect the station —three laboratory buildings, sleeping quarters, fuel dump, power plant, and vehicle dump—from accumulation of blowing snow and ice. It is expected that the new dome will have a useful life of 10-15 years.

G-20304

Gilchrist, J.T., **U.S. Antarctic Support study extension: Case 10—McMurdo Station-Outer Williams Field military construction and operation,** San Francisco, Bechtel, Inc., Apr. 10, 1972, 18p., Prepared for U.S. National Science Foundation.

This study is an extension of the U.S. Antarctic Research Program Scientific Support Study prepared by Bechtel in its report dated March, 1972 (see G-10769 through G-10772). With the exception of the air operations aspects this new case, called Case 10, is essentially comparable to Case 1 (the Base Case) of the original Study report, in that military construction and operation are considered with air operation personnel living at McMurdo. The initial new station construction cost for Case 10 is estimated at $20.6 million (without escalation) and the 20-year projected total costs at $1179 million. Basic criteria, additional assumptions and discussions of pertinent factors for Case 10 are included in successive sections of this report. These are followed by more detailed presentations of the cost analysis and simulation data. (Auth. mod.)

G-20305

Gilchrist, J.T., **U.S. Antarctic support study extension: Case 11—McMurdo Station-Williams Field military construction and civilian operation (modified operation),** San Francisco, Bechtel, Inc., Apr. 14, 1972, 16p., Prepared for U.S. National Science Foundation.

This study is an extension of the U.S. Antarctic Research Program Scientific Support Study prepared by Bechtel in its report dated March, 1972, (See G-10769 through G-10772). With the exception of the operational modifications and population reductions this new case, called Case 11, is essentially comparable to Case 5 of the original Study report, in that military construction and civilian operation are considered with air operation personnel living at McMurdo. The initial new station construction cost for Case 11 is estimated at $14.3 million (without escalation) and the 20-year projected total cost at $847 million. Basic criteria, additional assumptions and discussions of pertinent factors for Case 11 are included in successive sections of this report. These are followed by more detailed presentations of the cost analysis and simulation data. (Auth. mod.)

G-20313

Cullen, M., **Vanda Station—oasis in dry valleys,** *New Zealand antarctic record,* 1978 1(1), p.15-16.

Vanda Station, its environment and research activities are described. The station is operated during the summer months only as part of New Zealand's Antarctic Research Program. A leader, technician and meteorologist are stationed at Vanda each season to operate the scientific equipment which records climatological and solar radiation observations, and to measure the flow of the Onyx River and the ice thickness and temperature of Lake Vanda. The station also serves as a communications center for field parties working in the area. Seven field parties this season are conducting studies on the soils, geology, glaciology and geophysics of the region.

G-20318

Young, A., **Clothing man in a cold environment,** *New Zealand antarctic record,* 1978 1(1), p.31-33.

Investigations on the effectiveness of polar clothing, thermoregulation in man, and heat-stress within polar clothing are reported. The properties of eiderdown-filled and synthetic polyester-filled clothing as insulating garments were assessed, directly, by measuring temperature differences and heat flow on inside and outside surfaces of the clothing, and indirectly, by observing autonomic thermoregulatory responses, which in the face of a given set of conditions, allows characterization of the complete man-plus-clothing assembly. Down-filled clothing proved superior to polyester staple filler. One of the biggest problems of polar clothing is its high resistance to heat flow, which results in the wearer tending to overheat and sweat. The recent development of humidity sensors to be worn under clothing layers and the likelihood of new developments in the design of polar clothing should stimulate investigation into the problems of vapor transmission and heat-stress in clothing.

G-20334

Ostrekin, M.E., Shamont'ev, V.A., **Exploration in the Alasheyev Bight,** Seventh voyage of the R/V Ob',.1961-62, Jerusalem, Israel Program for Scientific Translations, 1968, p.98-106, TT 68-50312, For Russian original see 3G-4107.

A survey was conducted for the purpose of selecting a site for the new Soviet Antarctic station, Molodezhnaya. As a result of the survey, the southern shore of Alasheyev Bight was chosen and a temporary station organized. The advantages of this site are outlined in a report compiled on the basis of the survey. The main buildings of the station can be built on rock, fresh-water lakes are located nearby, as are gravel, rubble, and sand for building purposes. The climate is less severe than that of Mirnyy, and the ground relief and prevailing winds will prevent much snow accumulation. The southern end of Alasheyev Bight is deep enough to accommodate any ship drawing up to 10 m. The *Ob'* was able to dock near the shore for unloading with good oversnow access to the station. An oversnow route to the continental interior has been explored up to 200 km. Five areas were found suitable for ice airstrips for various types of airplanes (wheels and skis). Aerial and ground photo surveys were taken of the area.

G-20343

Sidorov, V.A., **Organization of the new Soviet station Molodezhnaya,** Seventh voyage of the R/V Ob',.1961-62, Jerusalem, Israel Program for Scientific Translations, 1968, p.204-207, TT 68-50312, For Russian original see 3G-4116.

After a detailed study of the region, a site for the new station was chosen on the coast of Alasheyev Bight. Poor ice conditions delayed progress of the *Ob'* to the ice barrier. The heavily crevassed nature of the shore ice made over-ice transport dangerous, so 10 tons of freight were airlifted from the ship to an airstrip 1 km from the station area; the equipment was then surface-transported by hand to the station. A temporary seasonal station was quickly constructed, and a scientific facility for aerological and magnetic observations was built. On March 18 the *Ob'* moored at the barrier, and unloading was completed in spite of bad weather conditions. Construction of permanent buildings was begun, but due to frost and formation of young sea ice, construction was halted and the station closed down for the winter.

G-20415

U.S. Navy Task Force 199, **Report of Antarctic Development Squadron Six: Operation *Deep Freeze* 78,** San Francisco, Calif., Apr. 1978, var. p.

The operations of Antarctic Development Six during *Deep Freeze* '78 are reported for the periods Aug. 26 to Sept. 6, 1977 and Oct. 3, 1977 to Feb. 24, 1978. Significant events, air operations, maintenance, logistics, administration and personnel, communications, photography, public affairs, medical operations, detachments, training, and safety are treated. A section outlining recommendations to improve the effectiveness efficiency, and safety of the operations is included.

G-20416

U.S. Navy Task Force 199, **Report of Operation *Deep Freeze* 78, 1977-1978,** San Francisco, Calif., June 1978, var. p.

This report describes the operations of *Deep Freeze* 78 from Aug. 29, 1977, to Mar. 11, 1978, in conjunction with the U.S. Antarctic Research Program. The objectives of the operation were to resupply South Pole and Siple stations, provide logistic support for inland field camps and parties, and support other science projects orginating from McMurdo Station, conduct a survey of the damaged aircraft LC-130 BUNO 148321, and transport materials for construction of the new Siple facility. Safety was stressed during the season. The report treats significant events, forces employed, science programs, operations, terminal operation, public works, logistics, communication and electronics, medical and dental activities, administration, executive staff, and personnel, separately.

G-20417

Martin, P., **Aircraft logistics and drifting buoy coverage for the first GARP global experiment,** *Arctic Ice Dynamics Joint Experiment. AIDJEX bulletin.* June 1978 No.40, p.103-108.

Briefly described here are the aircraft logistics related to deployment of drifting buoys during the first GARP global experiment. Aerial delivery of the buoys was de-emphasized in favor of ship deployment, and a summer working season rather than a winter one was chosen. This shift resulted in deployment of buoys north of the Antarctic Convergence, leaving the areas south of the Convergence without buoy coverage. For this situation the author blames the polar scientists themselves.

G-20432

Nakamura, J., **Food supply problems of an early JARE** [Shoki no nankyoku shokuryo], *Polar news (Kyokuchi).* July 27, 1978 No.27, p.7-12, In Japanese.

In 1956 a working group on supplies for JARE planned provisioning for the three stages of the expedition—on board ship, at the station, and for emergencies. During the voyage from Japan to the Antarctic, many of the fresh foodstuffs became stale because freezers and refrigerators on the icebreaker *Showa* did not work well. Provisions at the station were divided into two lots, one for field trips and the other for the station itself. At that time the station had no freezer, and most of the food spoiled. Emergency supplies, mostly dry provisions, remained in good condition.

G-20494

Soto, E.G., **Antarctic clothing,** Washington, D.C., U.S. Army Intelligence and Information Agency, Feb. 1976, 6p., AD-A021 714, Translated from Instituto Antártico Chileno. Boletín, No.8, 1975.

By the summer of 1972, the Chilean Antarctic Institute (INACH, Instituto Antartico Chileno) had carried out exploratory activities in the antarctic coastal zones, including studies on the food chains of fishes, benthic communities, tide gauging. In 1973, glaciological investigations began and made necessary going further into the continent, therefore introducing new logistics problems requiring further penetration, supervision, prevention of risks, ranging inward from the coasts, compulsory self-sufficiency, etc. As a consequence, necessary adaptations and modifications in clothing and equipment are recommended (Auth. mod.)

G-20496

Weiss, H.V., **Examination of radioactivity in the crushed rock from the PM-3A nuclear reactor site, McMurdo, Antarctica,** San Diego, Cal., Naval Undersea Center, Dec. 1976, 16p. AD-A035 826.

Radioactivity in McMurdo rock consists primarily of Cs137 and Sr90. The 6500 cu yds of affected material is estimated to contain 0.27 and 0.031 cl of these two elements, respectively. Cs137, but not Sr90, is tenaciously bound to the rock in seawater. Both are held firmly by the rock in distilled water. Thus, release to the environment would be significantly less in terrestrial than marine disposal. (Auth.)

G-20522

Makarov, N.I., **Comparative characteristics of the main types of climatic clothing of Vostok Station personnel,** Charlottesville, Va., Army Foreign Science and Technology Center, May 1974, 10p., ADA-005 876, For Russian original, see 6G-12098. 15 refs.

Research was carried out on various types of clothing used in the Antarctic. The basic KAE suit made of camel hair was found to be the most suitable in extreme weather conditions. The protective properties of clothing can be improved by increasing the amount of air under the clothing.

G-20577

New South Pole station, *Mosaic.* Fall 1974 5(4), p.18-20.

The new South Pole Station is being built to replace the older installation which has sunk into the ice sheet. The new station is a complex of buildings designed for a variety of disciplines—meteorology, atmospheric physics, seismology and others. Over all these rises a geodesic dome to keep the snow and wind at bay. The buildings and dome will not be heated, however, since heated buildings sink into underlying ice too rapidly. Other facilities not covered by the dome are housed in arched structures aligned with prevailing winds to minimize snow accumulation.

G-20620

Final report of the third Antarctic Treaty Meeting on Telecommunications, Washington, D.C., September 11-15, 1978, Washington, D.C., National Science Foundation, Oct. 1978, 24p.

The agenda of the Meeting included a description of telecommunication operations and analysis of information exchanged pursuant to a recommendation of the ninth Consultative Meeting, the identification of problems and discussion of possible solutions, proposals for improvements, and conclusions. The Meeting recognized that technological developments in telecommunications are likely to lead to greater diversity in methods adopted; however, the use of conventional HF systems should not be discouraged. A common system for operational, scientific, administrative and emergency purposes should be maintained.

G-20677

Matusov, A.L., **Human life support in Antarctica** [Zhizneobespechenie cheloveka v Antarktide], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten'.* 1978 No.97, p.74-85, In Russian.

An overview of the logistics support necessary for antarctic research is given. The following topics are discussed briefly: living quarters; water supply and waste disposal; clothing; food supply: and working and recreational facilities and opportunities.

G-20715

Peat, N., **Snow dogs,** Christchurch, Whitcoulls Publishers, 1978, 112p.

This book offers an illustrated account of the New Zealand huskies in Antarctica, their breeding, behavior, upbringing and training for the specialized role of pulling sledges, as well as their relationship with the Base staff. Readers are given a view of Scott Base and its dog lines through the author's factual outline of a pup's life. The part played by dogs during the early and modern eras of exploration, as well as their future role on the frozen continent as the nature of man's work there changes, and advances in mechanized transport are examined.

G-20739

Kudishkin, V.S., Leont'ev, E.B., **Results of navigability trials of antarctic ice by the *Ob'*** [Nekotorye rezul'taty ispytaniĭ khodkosti d/e *Ob'* v antarkticheskikh l'dakh], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1978 Vol.68, p.96-99, In Russian.

Instrument readings on various characteristics of ice and on speed of the *Ob'* in antarctic waters are used to assess the effectiveness of vessels of her type for resupply missions and other work in summer pack and drifting ice.

G-20748

Kudishkin, V.S., **Resonant hull vibrations of the *Ob'* when traversing ice cake** [Rezonansnye kolebaniia korpusa d/e *Ob'* pri dvizhenii v melkobitykh l'dakh], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1978 Vol.68, p.130-132, In Russian. 2 refs.

Hull vibrations of the *Ob'* are studied during its passage through antarctic ice cake at various speeds. Experimental data are presented on frequency and amplitude of hull vibrations in the resonance range. Desirable (supercritical) speeds are recommended.

G-20750

Kudishkin, V.S., **Experimental work on ice vibration in the *Ob'*** [Eksperimental'noe izuchenie ledovoĭ vibratsii d/e *Ob'*], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1978 Vol.68, p.140-143, In Russian. 5 refs.

A method for studying hull vibration under ice conditions has been worked out. The initial results of the application of the method to vibration in the *Ob'* hull in antarctic ice are presented.

G-20776

Vaudrey, K.D., **Ice excavation machine,** *U.S. Naval Construction Battalion Center, Port Hueneme, Calif. Civil Engineering Laboratory. Technical report.* Feb. 1977 CEL-TR-851, 28p. ADA-037 951.

A 30-hp ladder-type ice trencher was selected and procured for its low ground pressure and versatility. The chain was outfitted with specifically designed conical ice teeth, and a rotating ice chipper drum was designed and fabricated for the backhoe arm. Both modifications, along with an off-the-shelf hydraulic impactor attachment, were evaluated during a field test program after undergoing shakedown performance tests in the laboratory. A similar, but larger machine with identical teeth, procured under a separate task, was observed during an extended antarctic ice-trenching operation. The CEL-designed conical teeth made both ice excavation machines very efficient trenchers, cutting over 3,000 lineal feet (900 m) of ice with an average specific energy of only 220 in.-lb/in.3 (1,500 KPA). Both backhoe attachments were effective for special applications, such as ice hummock removal and deadman anchor emplacement. (Auth.)

G-20778

New Zealand. Department of Scientific and Industrial Research. Antarctic Division, **Antarctic operations manual,** Christchurch, June 1978, 105p.

This manual is intended to assist personnel in achieving success with utmost safety in the implementation of the New Zealand antarctic research program. Information is provided on matters of personal interest, i.e., the policies and benefits of the program, individual responsibilities, field operations, and organization and management of stores. Also outlined are procedures relative to fire, conservation, electrical hazards, preservation of historic and scientific sites, tourism, waste disposal, and safety.

G-20779

New Zealand. Department of Scientific and Industrial Research. Antarctic Division, **Antarctic field manual,** Christchurch, June 1978, 99p.

This manual is intended as an aid to planning and participating in field work in Antarctica. It contains sections on field travel and safety, field planning and logistics, field communications, and place names in New Zealand and Australian antarctic territory.

G-20783
U.S. Naval Support Force, Antarctica, **Operation *Deep Freeze;* Operation order No.1-79,** San Francisco, Calif., Aug. 23, 1978, var. p.

This OPORD outlines planning for the implementation of logistic support for the U.S. antarctic research program. Sections are provided on the operations and schedule of events for each research facility, scientific program plans, logistics, communications, public works, administration, public affairs, medical and dental procedures, legal procedures, field and terminal activities.

G-20790
Church, F.W., **Radio communications for travellers on the Arctic Ocean,** *Polar record.* May 1978 19(119), p.153.

The following aspects of radio communication are discussed: radio propagation, radio noise levels, radio equipment, general precautions, communications organization, and antarctic communications. Considerations regarding planning and maintaining radio communications for surface travelers in both the Arctic and Antarctic are substantially the same. However, the reflecting ionospheric layer, essential for higher-frequency radio communication beyond the horizon, varies in height to a much greater degree over the Antarctic than in the Arctic. Hence radio propagation paths and radio frequencies to be used are more difficult to predict. While the absence of frequency-sounding facilities at an Arctic radio station is unlikely to affect seriously the success of radio communication, at a similar antarctic station the lack of such facilities will undoubtedly increase the difficulty in establishing contact with a distant station or traveling party.

G-20802
U.S. Naval Construction Battalion Center, Port Hueneme, Calif. Civil Engineering Laboratory, **Portland cement concrete for Antarctica,** *CEL techdata sheet.* May 1975 75-8, 2p., 1 ref.

The report outlines the CEL study to find and test aggregates for use with portland cement concrete suitable for Antarctic construction. Such aggregates were found near McMurdo and samples sent stateside for testing. Mixing and curing procedures are listed and a contact for additional information is given.

G-20813
U.S. Naval Construction Battalion Center, Port Hueneme, Calif. Civil Engineering Laboratory, **4-by-4 cargo/passenger van with high flotation tires,** *CEL techdata sheet.* Mar. 1973 73-5, 2p., 1 ref.

Gives basic data on a van type vehicle capable of carrying twenty passengers or 2.5 tons of cargo over improved roads of snow, ice, or frozen ground. A procurement source and a CEL contact are provided.

G-20814
U.S. Naval Construction Battalion Center, Port Hueneme, Calif. Civil Engineering Laboratory, **4-by4 station wagon/light cargo vehicle with high flotation tires,** *CEL techdata sheet.* Mar. 1973 73-6, 2p., 1 ref.

Describes a vehicle equipped with either a station wagon or panel-delivery body for passenger or light cargo carrying in polar regions. The wagon option gives six-passenger capacity while the panel gives three passengers and an 800-pound capacity. A procurement source and a CEL contact are provided.

G-20815
U.S. Naval Construction Battalion Center, Port Hueneme, Calif. Civil Engineering Laboratory, **Road transitions between land, snow and ice,** *CEL techdata sheet,* Aug. 1975 75-21, 2p., 1 ref.

Describes CEL developed procedures for coping with problems of road transition from sea ice to shelf ice, snow to land, and sea ice to land. These include constructing a timber ramp as a transition road between these various surfaces.

G-20816
U.S. Naval Construction Battalion Center, Port Hueneme, Calif. Civil Engineering Laboratory, **Caulking compounds for application at low temperatures,** *CEL techdata sheet.* Mar. 1975 75-3, 2p., 1 ref.

Reports on the extrudability of a variety of caulking materials at temperatures between 75F and -45F. Test criteria, materials tested, and test results are given and CEL contacts are identified.

G-20817
U.S. Naval Construction Battalion Center, Port Hueneme, Calif. Civil Engineering Laboratory, **Snow transport equipment model 1000 towed snowplow carrier,** *CEL techdata sheet.* Nov. 1974 74-10, 1p.

A towed snowplow carrier for use in construction of elevated snow roads is briefly described. The advantages of this ski-mounted equipment are listed and a CEL contact is shown.

G-20856
Moore, R.G., **Polar Star—the second time around,** *U.S. Naval Institute. Proceedings.* Oct. 1978 104(10), p.107-112.

Polar Star's second commanding officer describes the ship's second ice trials and first Antarctic deployment. Clearing the channel in the fast ice to McMurdo proved to be a relatively quick procedure, a little more than one day compared to a week's effort by the Wind class breakers. However, widening the channel, preventing refreezing, and clearing a turning basin played havoc with the propellers. Although engine instruments indicated that they stayed within safe limits, the vibration resulting from almost continuous ingestion of ice by the propellers is described as "awesome". The propeller problems have been identified and repairs are underway.

G-20874
Fahy, F.W., **Aluminium corrosion assessment in Antarctica,** *New Zealand antarctic record.* 1978 1(2), p.20-25, 5 refs.

In order to develop cost-effective ways of protecting architectural aluminum against pollution-induced corrosion, racks of aluminum coupons have been mounted in sites widely varying in climate, i.e., New Guinea, Scott Base and Arrival Heights. The coupon material mounting system and anodizing process are briefly described, and weight changes of the coupons during atmospheric exposure at the various sites are illustrated.

G-20875
Varcoe, G.E., **Concreting in Antarctica,** *New Zealand antarctic record.* 1978 1(2), p.26-30.

Tests of trial mixes of concrete aggregate to be used in construction at Scott Base indicated that difficulty would be experienced in making a workable concrete mix with the "red" or No.1 aggregate, but that satisfactory concrete could be made with the "black" aggregate (No.2). However, both aggregates will require a high cement content. Methods are outlined for supplying cement to Scott Base, sup-

plying and testing aggregate, supplying and heating water, heating and drying aggregate, mixing, insulating aggregate from permafrost, and keeping placed concrete from freezing.

G-20904

Al Faisal, M., **Water supply and weather modifications through the use of transported icebergs from the Antarctic,** *Desalination.* Mar. 1977 20(1/2/3), p.415-423, 8 refs.

Saudi Arabia is engaged in a wide-scale program of seawater desalinization. It is also presently considering the use of Antarctic icebergs as a source of freshwater and as a weather modifier. Suitable icebergs can be found in a zone northeast of the Weddell Sea. Means for locating and inspecting them are described. Furthermore, methods for towing such icebergs from the Antarctic to the Aden Gulf and from the Aden Gulf to any Saudi Arabian Coast are discussed. The necessary steps for protection against melting in transit are also explained. An outline of the various proposed techniques to obtain fresh water from icebergs is given. The considerable cold mass of icebergs is a powerful tool for microclimate improvement, especially on hot coastal plains with a high degree of atmospheric humidity. The lowering of the temperature through fog formation could indeed reduce the costly summer peak demands for water and electricity. Economic projections show that the operating costs of water from icebergs delivered to Saudi Arabia compares favorably with water produced by desalinization. Investments forecasts favor also the iceberg source. (Auth.)

G-20945

Wilkes, O., Mann, B., **Story of Nukey Poo,** *Bulletin of the atomic scientists.* Oct. 1978 34(8), p.32-36, 10 refs. For an earlier version of this see G-18416.

The PM-3A nuclear power reactor, installed at McMurdo Station in 1961-62, has been dismantled, and, together with approximately 12,200 tons of contaminated soil, transported to Georgia and California for disposal. This paper discusses the economics of nuclear power, describes the nuclear reactor and its environs, gives details of the operation and engineering aspects of the system, and recounts of the events leading up to the dismantling and removal of the system. The plant's longest run occurred in 1971, when 1,600 kw with water distillation was maintained for 172 days. However, the reactor was beset by numerous malfunctions and stoppages, including a hydrogen fire in the containment tanks during the first year, which closed it down for 8 weeks. Also, the power produced was very expensive. The final shutdown occurred in Sep. 1972, when moisture was discovered which might have initiated chloride stress corrosion cracking im primary piping or in the reactor pressure vessel. A detailed inspection was never undertaken. It was calculated that detailed inspection and repair would cost between $1.5 and $2 million and take two to three years. The plant was dismantled over a period of several years. It has been estimated that the entire decommissioning process cost over $1 million.

G-20967

Flechtenmacher, W., Schreiber, W., Christians, O., Roschke, N., **Processing of krill** [Die Verarbeitung von Krill], *Informationen für die Fischwirtschaft.* 1976 23(6), p.188-196, In German. 4 refs.

Processing experiments during the German Antarctic Expedition of 1975-1976 show that high-protein small shrimp can be used in different forms, such as whole deep frozen, raw, boiled or steamed krill; deep frozen krill paste; deep frozen coagulate from raw krill paste; deep frozen krill protein hydrolysate from raw krill paste; and raw krill meal requiring no refrigeration and suitable as animal food.

G-20970

Papajewski, H., Schreiber, W., **Mechanical processing of antarctic fish** [Maschinelle Verarbeitung antarktischer Fische], *Informationen für die Fischwirtschaft.* 1977 24(3/4), p.114-117, In German. 4 refs.

During the fishery cruises of the *Walther Herwig* and *Weser* in the South Atlantic Ocean in the 1975-1976 season, ten different species of fish were caught and processed. The length, width and weight of each species were measured and their usefulness is discussed.

G-20972

Roschke, N., **Quality of preservation of antarctic fish and krill products** [Haltbarkeit von antarktischen Fischen und Krillprodukten], *Informationen für die Fischwirtschaft.* 1977 24(3/4), p.121-123, In German. 3 refs.

Quality of processed and unprocessed antarctic fish and krill was tested after frozen storage for various lengths of time. Various stages of deterioration are described.

G-20973

Leinemann, M., Christians, O., **Method for the analysis of tissue-juice retention in cooked krill paste** [Methode zur Prüfung der Gewebesaftlässigkeit in kochkrillfarce (KKF)], *Informationen für die Fischwirtschaft.* 1977 24(3/4), p.124-126, In German.

To determine the amount of moisture in a krill paste, a method using a press is compared with one using a centrifuge, and the latter is found more satisfactory.

G-20976

Roschke, N., **Measuring moisture in krill meal** [Feuchtigkeitsmessungen in Krillmehl], *Informationen für die Fischwirtschaft.* 1977 24(5), p.180-182, In German. 5 refs.

A new method of analysis of krill-meal moisture consists of measuring the dielectric constant in an HF alternating field. Significant differences in values of constants for water and organic solid matter in krill meal are used to determine the amount of moisture.

G-20989

Garshenin, V.F., **Experiment in using a suit with electric heating elements under conditions of the coastal zone of the antarctic continent,** *U.S. Army Foreign Science and Technology Center. Translation.* Dec. 1976 FSTC-617-76, 5p., ADB-019 040L, Translated from Gigiena i sanitariia, 1974, No.11, p.100-101.

During the 17th Soviet Antarctic Expedition, environmental physiological research was conducted on the *Penguin* clothing unit with electric heating elements at the Bellingshausen Station. The unit consists of a sleeveless jacket and slippers which have electric heating elements placed between layers; they can be powered by any 12 volt, not less than 50 watts power source. The unit weighs one kilogram. It is put on over the underwear, and the heating elements must be fitted as close to the surface of the body as possible. Normal clothing which polar explorers wear is put on over the unit. Environmental physiological research on the *Penguin* suit with electric heating elements revealed a number of major drawbacks with it, which limit the suit's application in the coastal zone of the antarctic continent. (Auth.)

G-20990

Kawasaki, I., **Food and logistics material for the polar traverse,** *U.S. Army Foreign Science and Technology Center. Translation.* May 1975 FSTC-HT-23-0483-75, 24p., ADB-005 807L, For Japanese original see G-13710.

Based on the experience as a member of the ninth south pole wintering troop, brief comments on the provisions and equipment are made, referring to the troop records. Basically, both food supplies and equipment were satisfactorily prepared, except that minor improvement for more pleasant travel was suggested. Details of meals and clothes are also reviewed from the practical point of view, which could be a guide for the future Antarctic Pole Expedition. (Auth.)

G-21045

Gorbonosova, N.B., Smurov, S.V., **Design recommendations for insulated clothing for members of Soviet antarctic expeditions** [Razrabotka rekomendatsiĭ po sozdaniiu obraztsov teplozashchitnoĭ odezhdy uchastnikov Sovetskikh antarkticheskikh ekspeditsiĭ], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy.* 1978 Vol.356, p.127-132, In Russian. 15 refs.

The clothing in use at present by SAE personnel is not sufficiently warm, largely because it is not wind-resistant enough and not hermetically constructed. Using data on heat production and loss, work patterns, energetics, and physical and chemical characteristics of the garments now in use, recommendations for new clothing designs are offered. Tests show that the construction and insulating properties of the proposed clothing would be suitable for antarctic use.

G-21123

Magnelli, D.D., **JATO rocket motor Mark 6, Mod 1, Antarctic test program,** *U.S. Naval Ordnance Station Indian Head technical report,* Sep. 15, 1978 NOS-IHTR-510, 68p. ADB 030 113.

A two-phase program was conducted to determine the necessity for continued structural modifications to the JATO rocket motor Mk 6 Mod 1 hangers for use in antarctic operations on LC-130 aircraft. Phase I was the acquisition of shock and vibration loads experienced by the JATO motors during actual aircraft takeoffs from antarctic field stations. The worst case conditions measured were experienced during JATO takeoff from Dome Charlie Station. Phase II was the analysis of the data and the formulation and conduct of a vibration test at Indian Head of 12 motors, simulating the worst case conditions experienced in Antarctica. It was concluded that the unmodified JATO motor hangers were adequate for use under the most extreme antarctic conditions. (Auth.)

G-21152

Drewry, D.J., Meldrum, D.T., **Antarctic airborne radio echo sounding, 1977-78,** *Polar record.* Sep. 1978 19(120), p.267-273, 7 refs.

Radio echo sounding field work during the 1977-78 austral summer included evaluation of new radio echo sounding and magnetometer installations, extension of previous work on the 100-km grid coverage in east Antarctica, extension of the 50-100 km grid in west Antarctica; terrain analysis in the Wilkes Subglacial Basin, flow-line studies upstream of Vostok and downstream of Byrd stations, investigation of internal layering at Dome C, and studies of the Ross Ice Shelf. The radio echo sounding equipment and airborne data system are described and preliminary results are given for the glaciological, geological, and geophysical studies. The first large sub-ice lake to be discovered in west Antarctica was detected along the western flank of the Ellsworth Mts. between the Sentinel and Heritage ranges. The water body is at least 13 km in extent and occupies a bedrock hollow beneath about 3,500 m of ice.

G-21200

Keeton, J.R., **Field guide for portland cement concrete construction in Antarctica,** *U.S. Naval Construction Batallion Center, Port Hueneme, Calif. Civil Engineering Laboratory. Technical note,* Oct. 1969 NCEL-TN-1060, 18p., AD-861 520, 3 refs.

The guide was prepared for field use by military crews in producing, placing and curing portland cement concrete in Antarctica under summer temperatures down to 15F. Since the principal factors are mix control and mix temperature during production and exposed surface temperature control for 3 days following placement, these steps are discussed in considerable detail. The technical information presented in this document is based on field experiments at McMurdo Station, during *Deep Freeze* 69. (Auth. mod.)

G-21201

NUS Corporation, Rockville, Md., **Icebreaker propulsion systems feasibility study. Vol.7. Mission sensitivity analyses,** Its report No.323, Feb. 1967, 51p. AD-861 585.

The feasibility of polar icebreaker propulsion systems is studied. A ship with the characteristics of the reference design can accomplish approx 50% of individual antarctic scientific missions in the continuing mode, and 100% in the ramming mode. The results of the analysis appear to amply reinforce the validity of prior conclusions as to the superior cost effectiveness of nuclear propulsion systems for proposed polar icebreakers.

G-21206

Dayton, R.B., Jr., **Polar icebreaker preliminary structural design and special studies,** Washington, D.C., U.S. Coast Guard, Office of Engineering, Aug. 1968, 175p. AD-845 560.

The purpose of this document is to record and present the information and concepts that have been compiled and developed during the preliminary design of a 20,000 shp diesel electric icebreaker. This report deals with 2nd cycle preliminary structural design of a polar icebreaker for use in arctic and antarctic regions. It includes the development of dynamic ice loads, a critique on the possibility of fatigue failure, elastic vs plastic plate design and those structural analyses required to determine preliminary hull scantlings. (Auth.)

G-21208

U.S. Coast Guard, **Polar transportation requirements study report. Volume 3. Appendixes "B"-"J",** Washington, D.C., Nov. 1968, 413p. AD-694 968.

To validate transportation requirements in polar regions, all of the federal government agencies involved with polar activities were requested to submit their transportation requirements to the Coast Guard for inclusion in this study. Also Polar Advisory Group representatives and others were asked to answer a questionnaire regarding their polar objectives. This document presents the information obtained. Pertinent antarctic material can be found in appendixes E and F.

G-21209

U.S. Coast Guard, **Polar transportation requirements study report. Volume 2. Appendix "A". Systems analysis,** Washington, D.C., Nov. 1968, 502p. AD-694 967.

This discussion addresses the benefits of providing polar transportation and describes alternative systems along with their costs. Chapter 4 on Antarctica covers the following topics: determining goals and objectives, alternative systems design and cost, and effectiveness cost comparisons. The results indicate that a system employing a shiplift is the best choice for antarctic operations.

G-21211

U.S. Coast Guard, **Polar transportation requirements study report. Volume 1,** Washington, D.C., Nov. 1968, 92p., AD-694 966, 137 refs.

The problem with which the study deals can be stated in three parts: to determine the justification for Coast Guard icebreakers by establishing a role in the polar regions related to the marine environment; to recommend how this role can best be implemented; and to define a Coast Guard polar role and evaluate the need for icebreakers within the context of that role. The special polar transportation problems posed by Antarctica are noted, and the findings of a cost-effectiveness analysis of a transportation system for antarctic operations are summarized.

G-21256

U.S. Coast Guard, **Polar icebreaker cruise report, Operation *Deep Freeze* '79,** Seattle, Washington, Mar. 8, 1979, Var. p.

This cruise report presents details of operations aboard the USCGC icebreaker *Polar Star* in support of *Deep Freeze* '79. The main tasks of the cruise were to break open the channel to McMurdo Sound and provide science logistics support. Other tasks included conduct training and gathering engineering data. The following events are described: ship and air operations, navigation, communications and postal affairs, science activities, engineering aspects, administration, supply and logistics, medical practices, and public relations. Assigned personnel and recommendations for future cruises are listed.

G-21295

Schlatter, R.P., **Plan for disposal of small amounts of waste at temporary camps, shelters, and bases with small garrisons** [Proposición para la eliminación de poco volumen de basura en campamentos científicas de temporada, refugios y bases antárticas con poco personal], *Santiago de Chile. Instituto Antártico Chileno. Revista de difusión,* Dec. 1978 No.10, p.37-40, In Spanish.

Guidelines for the safe storage and disposal of various types of waste: combustible and non-combustible solid waste, night soil, toxic and nontoxic liquids.

G-21488

U.S. Coast Guard, Little, B.S., **Deep Freeze 1979 Cruise Report,** Long Beach, Apr. 1979, 97p.

This is the report of the Coast Guard cutter *Glacier* for the 1979 Deep Freeze program. She carried personnel and equipment for several scientific missions including: bird transects; marine geologic survey of the antarctic continental margin; and physical oceanography of the Ross Sea. The latter two programs were severely hampered when the *Glacier* had to go to the aid of the disabled *Polar Star* and then to take over the annual breakin and resupply work. The report is divided into the following sections: ship operations; air operations; navigation; communications and electronics; marine science operations; engineering; administration; supply and logistics; medical; public relations; personnel list; and recommendations.

G-21642

Schoenhals, S.R., **LC-130R research flights, 1977-78,** *Antarctic journal of the United States.* Oct. 1978 13(4), p.224-225, 1 ref.

During the summer of 1977, modifications to the research-configured LC-130R aircraft operated by Navy Antarctic Development Squadron Six (VXE-6) allowed the addition of three types of research projects. An air sampling manifold and exhaust ports were added to accommodate air chemistry research, and coaxial cables were installed in the wings to accommodate a radio echo ice sounding system. An airborne magnetometer system was also installed at the Naval Air Station, Patuxent River, Md. The airborne research data system (ARDS) was used to supply and record data to support both series of research flights. The flights are briefly described and the ARDS channel assignments and data characteristics are tabulated.

G-21643

Gudmandsen, P., Pallisgaard, M., Skou, N., Tejlgaard, J., **New 60-megahertz antenna array for radio echo sounding,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.226-227, 2 refs.

A new 60-mHz dipole antenna system, constructed to fit the new wing configuration of the LC-130 Hercules aircraft, is described. The antenna system is in principle an array of dipoles suspended below the wing of the aircraft, using the lower surface as a reflector. Thus the radiation beam is directed toward the ice surface. Three configurations are described. The antenna arrays are used in connection with a pulse radar system with pulse lengths as small as 60 nanosec. Therefore, a wide frequency bandwidth of the array is a major design criterion. The antenna system operated for about 150 hr of sounding during the 1977-78 antarctic season with only minor difficulties.

G-21644

Bellafronto, R.L., **Public Works Department, *Deep Freeze* 78,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.227.

Fifty-two Public Works Dept. personnel were deployed on the winter fly-in (WINFLY) to McMurdo in late Aug. 1977. The primary project was construction of the annual ice runway and connecting road system. Other significant projects during the season were: construction of facilities to support the TV studio in building 155; construction of a 90,000-gal fuel farm in the vicinity of Scott Base; and construction of an elevated snow road from Scott Base to Williams Field. In addition, two generators were installed, and the routine functions that consume most of the productive effort at McMurdo were carried out.

G-21645

Eckman, J.F., **Ship operations, *Deep Freeze* 78,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.227-229.

The itineraries and operations of the icebreakers *Glacier, Burton Island,* and *Polar Star,* the cargo ship *Bland,* and the tankship *Maumee* in support of the U.S. Antarctic Research Program are described. The *Glacier* and *Burton Island* furnished support for scientific activities. The channel break into Winter Quarters Bay was accomplished by the *Polar Star.* The *Bland* and *Maumee* provided resupply support. Icebreaker helicopters flew 169 flights in support of science and operations. The *Burton Island* was decommissioned after her return to Oakland, Calif.

G-21646

Esser, A.C., Wolak, R.J., **Contractor support,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.229-231.

Contractor support furnished by Holmes and Narver during its 10th season in Antarctica to McMurdo, Siple, South Pole, and Palmer stations, Williams Field, and aboard *Hero* is described, and long-range development planning to upgrade McMurdo is discussed. Contract support personnel at McMurdo were challenged by an ambitious field program during USARP 78. Construction was started on the new Siple II Station. Preparations were made at Williams Field for next year's construction of Williams Field II. In addition to a number of operational and maintenance projects carried out at Palmer Station, the newly installed fiberglass "krill huts" with aquaria were placed in full operation for the first time, housing live krill gathered during *Hero's* initial cruise of the season to Palmer.

G-21648

Lipps, J.H., **East Base, Stonington Island, Antarctic Peninsula,** *Antarctic journal of the United States.* Oct. 1978 13(4), p.231-232, 6 refs.

The author responds to various comments received on his articles describing the history and condition of East Base, located at Marguerite Bay. Recent information indicates that the Polar Research Board, National Academy of Sciences, has considered a resolution proposing that East Base be designated an Antarctic Historical Monument with proper measures taken to preserve it.

G-21711

Gillmor, C.S., **Vodka amongst the penguins—hamming with the Russians in Antarctica,** *73 magazine for radio amateurs,* June 1979, p.126-133.

The author spent 13 months at Mirnyy in 1960-1961 where he initiated a program of cosmic radio noise measurements. He also participated in the operation of the Mirnyy ham station UA1KAE. He describes both the technical work, equipment and procedures, and the daily life of Mirnyy.

See also:
A-19515 A-19778 A-19862 A-20433 A-20826 A-20830
A-21449 B-19978 B-19979 B-19986 B-19987 B-20002 B-20526
B-20680 B-20969 B-20977 B-21450 B-21451 C-20341 D-19768
D-20850 D-20974 D-21181 D-21444 E-19645 E-19981
E-21639 E-21639 E-21640 F-19402 F-19693 F-19755 F-19758
F-19841 F-19878 F-19991 F-20158 F-20300 F-20307 F-20336
F-20337 F-20403 F-20448 F-20449 F-20450 F-20451 F-20452
F-20453 F-20454 F-20458 F-20460 F-20461 F-20464 F-20465
F-20466 F-20468 F-20469 F-20470 F-20472 F-20473 F-20475
F-20476 F-20477 F-20478 F-20479 F-20480 F-20481 F-20482
F-20483 F-20484 F-20485 F-20486 F-20487 F-20489 F-20490
F-20604 F-20711 F-20713 F-20749 F-20907 F-21078 F-21298
F-21337 F-21389 F-21390 F-21536 F-21715 H-19266 H-19303
H-20345 H-20866 H-21146 I-19362 I-19707 I-20625 I-20742
I-20827 I-21006 I-21405 J-20338 J-20589 K-19453 K-19713
K-19723 K-19728 K-19743 K-20294 K-20555 K-20771
K-21630

H. MEDICAL SCIENCES

H-19266

Lugg, D.J., **Physiological adaptation and health of an expedition in Antarctica, with comment on behavioural adaptation,** *Australian National Antarctic Research Expeditions. Scientific reports, Ser. B(4) Medical science,* 1977 No.126, 188p., Refs. p.151-168.

This study consists of a number of interrelated observations on physiology, thermal comfort, cold exposure, activity, health and behavior of a nine-man expedition at Davis, Antarctica, in 1963, and a health survey of the Australian expeditions from 1947 to 1972. Medical practice and research in Antarctica are reviewed, and descriptions are given of the environment, and cold exposure experienced; expedition organization and programs are given. The absence of thermal discomfort at temperatures between 5.6C and 27.2C and the low value of 14.2C preferred temperature are shown to be due to adjustments in clothing, clothing being shown to play a larger part in determining the thermal sensation than the indoor air temperature. A comparison of the thermal comfort and the clothing worn, both indoors and outdoors, in periods before and after midwinter strongly suggests that acclimatization to cold had occurred. Observations of men on field traverses showed a complex interaction between activity, calorie intake and energy expenditure, with dehydration being considered the most important factor influencing the substantial weight losses that occurred. The group adjusted readily to the climate, isolation, work, stress and to each other. This is emphasized by the low incidence of mental illness. Comment on behavioral adaptation is made. Although physiological adaptation in the form of acclimatization to cold is suggested by the Davis study, it is concluded that overall adaptation of the group is more influenced by behavioral than by physiological factors. (Auth. mod.)

H-19300

Kozuka, H., Kanda, Y., **Variations of trace elements in the hair of wintering members of the Japanese Antarctic Research Expedition,** *Antarctic record.* Aug. 1977 No.59, p.108-119, 8 refs., In Japanese with English summary.

The concentrations of trace elements, Hg, Au, Cu, Zn, Sb, As and Br, in the hairs collected from the members of the wintering parties of the 13th and 15th Japanese Antarctic Research Expedition were determined by neutron activation analysis, and the variations of their concentrations during the stay in Antarctica were discussed. The contents of Hg, Au, Zn and As showed a decreasing trend during the stay in Antarctica. The mercury content showed characteristic variation. Its average concentration and standard deviation decreased from 7.0 ppm to 4.2 ppm and from 1.8 to 0.6 ppm respectively at the end of the stay in Antarctica. The concentration increased again and scattered over a wide range after the return to Japan. The concentration of mercury in the hair reflects both metabolic processes and external contamination. From the results obtained in this work, then, the contributions to the decrease of mercury during the stay in Antarctica were estimated to be 2 ppm for metabolic processes and 1 ppm for external contamination. The hairs collected on board the icebreaker *Fuji* showed extremely high concentrations of antimony, indicating the environmental pollution on the icebreaker caused by fuel combustion. (Auth.)

H-19301

Miyashita, M., Atomi, Y., Ueda, K., **Body burdens of cesium-137 and potassium-40 in 21 members of the wintering party of the 16th JARE,** *Antarctic record,* Aug. 1977 No.59, p.120-124, 8 refs., In Japanese with English summary.

In this study, body burdens of cesium-137 and potassium-40 were measured using a human counter with 21 members of the 16th wintering party. The purposes of these measurements were to observe the radioactive pollution in Japan and Antarctica through the human body, and to estimate the effect of the Antarctic living on the body composition. The mean value of body burdens of 137 Cs increased from 1.20 to 1.69 nCi in the case of six traverse members of the Yamato Mountains, while there was no significant difference in the case of fifteen base members. The mean value of body weights increased significantly after the Antarctic living and accordingly the total body potassium increased significantly, while the body fat remained unchanged. (Auth.)

H-19303

Watanabe, K., Asahina, K., Suzuki, T., Sasaki, T., Ghoda, A., **Bacteriological investigation of the pollution at Syowa Station,** *Antarctic record,* Aug. 1977 No.59, p.138-148, 1 ref., In Japanese with English summary.

Bacteriological investigation of pollution caused by human beings was conducted at Showa Station. Special attention was paid to the contamination of Enterobacteriaceae *(E. coli).* The soil, water, air, snow and ice were examined both at Syowa Station and Mizuho Camp. The following results were obtained. *E. coli* was not detected at the bacteriological pollution monitoring points which were set up by the 15th Japanese Antarctic Expedition. On the other hand, in the waterworks and in the drinking water at Showa Station, *E. coli* was detected from many parts. No pathogenic bacteria have been found so far. However, some means of effective prevention should be considered to ensure healthy living at Syowa Station. Some birds were also examined in terms of bacteriological pollution. (Auth.)

H-19304

Matsuda, T., **Changes in social life of wintering parties of Japanese Antarctic Research Expedition,** *Antarctic record,* Aug. 1977 No.59, p.149-171, 21 refs., In Japanese with English summary.

During the Japanese Antarctic Research Expedition between 1956 and 1976, 15 wintering parties were sent to Showa Station. A comparative study on their life was made. The changes of their living environments which included dwelling conditions, supply of electrical power and water supply were investigated. There were some characteristics of a group in the wintering parties. These characteristics were shown by the words in vogue, tastes for food, nicknames, seating position at table, and screening. The management of the wintering parties was studied. The rules for the management of wintering parties have changed gradually. There was a correlation between times of meetings, which were held during each wintering period, and the number of wintering persons. Newspapers which were published by some wintering parties were helpful. (Auth.)

H-19345

Macpherson, N., **Adaptation of groups to antarctic isolation,** *Polar record.* Sep. 1977 18(117), p.581-585.

Human adaptation to the isolation of Antarctic working conditions involves the evolution of a social system which has a more prominent informal component than in other, more normal group situations. A greater degree of interpersonal conflict is involved, and the group develops its own peculiar characteristics, such as language and humour. Essentially, this is a separate microculture, an important feature of which is the degree of cohesion present between individuals in the group. Leadership practices fundamentally affect cohesion and if the important problem of how to achieve high morale groups is to be solved, then a greater understanding of the evolution of social structure in isolation, and factors affecting this evolution, such as leadership, is needed. From this it follows that the emphasis of research efforts should be placed on an understanding of group adjustment rather than individual adjustment and that a global, interdisciplinary study should be instigated. It may then become possible to identify external as well as internal factors which affect the cohesion of a group and to arrive at an understanding of the true complexity of human adaptation to isolation. (Auth.)

H-19352

Lisney, S.J.W., **Dental problems in Antarctica,** *British dental journal,* Aug. 3, 1976 141(3), p.91-92, 22 refs.

Dental and oral complaints have been a common feature of antarctic exploration since the earliest expeditions. Contrary to the long held belief that extreme cold may have a deleterious effect on oral tissues, Stanmeyer and Adams (1959) produced evidence that suggested that it may be beneficial. They found that reduced mouth temperatures altered the metabolic activity of the plaque, with less acid being produced. It was concluded that if certain conditions regarding oral hygiene, diet, etc. were fulfilled, there was no greater risk of dental disease in Antarctica than anywhere else. Recent reports, however, suggest that dental disease is still frequent among those spending long periods of time in Antarctica.

H-19441

Azuma, T., **Acclimatization of physiological functions in Antarctica** [Nankyoku ni okeru seiri kino no junka], *Antarctic record,* 1963 No.17, p.69-70, In Japanese.

Data collected on the staff of the 1st, 3rd and 4th JARE wintering-over groups is presented. Body weight showed a gradual increase during the winter season. It was concluded that this was a result of changes in physical activity rather than a direct effect of the cold. No significant change in blood pressure was noted. Disturbances in circadian rhythm were less marked in the continental areas, with extended darkness, than in the Southern Indian Ocean. Men stationed at Showa exhibited a decrease in white blood cells; however, the percentage index showed that lymphatic corpuscles had increased. Both urine output and Na and K secretion rose. Urine 17-ketosteroid levels showed a tendency to rise at low atmospheric pressure. The relations of 17-ketosteroids, Na and K secretion, and the percentage index of eosinophils in the blood to the circadian rhythm showed no significant alterations.

H-19443

Yoshioka, T., **Sickness in Antarctica** [Nankyoku ni okeru shobyo], *Antarctic record,* 1963 No.17, p.70-71, In Japanese. 4 refs.

This is a statistical summary of the medical problems encountered by the participants of JARE. Most frequent were gastric problems, nervous disorders, external wounds, dental problems, frost-bite, respiratory infections, snow-blindness, insomnia, neurotic effects of isolation, and dermatological complaints.

H-19449

Lund, S.M., Dowdle, E.B., **Effect of prolonged isolation from environmental allergens on the clinical and laboratory manifestations of the allergic state,** *South African medical journal.* Sep. 24, 1977 52(14), p.556-561, 14 refs.

The 1975 South African Antarctic expedition included 8 men with a history of allergy, 7 who showed cutaneous hypersensitivity to common allergens, but denied having experienced symptoms, and 6 who had neither symptoms nor positive skin tests. During a year of residence in the essentially allergen-free, barren environment of Antarctica, allergic subjects were entirely symptom-free. Prolonged isolation from environmental allergens did not consistently diminish the serum concentration of total or specific IgE or the intensity of positive skin test reactions, which indicates that the cells responsible for the synthesis and secretion of reaginic antibodies have a prolonged existence and do not require repeated allergenic stimulation for maintenance of function. (Auth.)

H-19488

Vallance, S., **Relationships between ascorbic acid and serum proteins of the immune system,** *British medical journal,* Aug. 13, 1977 Vol.2, p.437-438, 5 refs.

This paper presents the results of an investigation into relationships between ascorbic acid (AA) and immunoglobulins in subjects at a British Antarctic base, isolated from new sources of infection for almost a year. These results show that AA may increase IgG and IgM synthesis, though the immunological significance of this is uncertain. Specific immunoglobulin (IgG) levels were affected more than those of nonspecific immunoglobulin (IgM). To support a prophylactic effect of AA against acute infections the reverse would be expected. Also the regression lines of the AA/immunoglobulin relationships were well within the normal ranges of both IgG (6.0-17.0 g/l) and IgM (0.5-2.5 g/l) and there is no evidence to suggest that healthy subjects with immunoglobulin titres in the upper ranges of normal are more resistant to acute infections than those with lower levels. Further investigation of these relationships is obviously required.

H-19531

Kurbanov, V.V., **Clinical and biochemical studies of human adaptation in central Antarctica as applied to space biology and medicine** [Kliniko-biokhimicheskie aspekty adaptatsii cheloveka v tsentral'noĭ Antarktide primenitel'no k zadacham kosmicheskoĭ biologii i meditsiny], *Kosmicheskaia biologiia i aviakosmicheskaia meditsina,* 1977 11(4), p.34-41, In Russian with English summary. 8 refs.

The paper presents the results of clinical, physiological and biochemical examinations of 27 polar explorers, members of the 17th Soviet Antarctic Expedition at Vostok Station. It gives data on the morbidity rate and describes the development of the asthenic-neurotic syndrome. On the basis of studies of catecholamines and serotonin, the role of the sympatho-adrenal system in the human adaptation to the harsh environments of the Central Antarctica is shown. (Auth.)

H-19591

Dick, E.C., Mandel, A.D., Warshauer, D.M., Conklin, S.C., Jerde, R.S., **Respiratory virus transmission at McMurdo Station: isolation of rhinoviruses from common colds during the winter fly-in period, 1976,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.2-3, 7 refs.

In virus isolation experiments at McMurdo's Eklund Biological Center, nasal washings were inoculated into a human diploid cell strain (fetal tonsil cells), primary rhesus monkey kidney cells, and a continuous cell line, HEp-2. Thirty-two specimens were inoculated

and 20 viruses were isolated, an isolation rate of 63 percent. All viruses were rhinoviruses and were obtained from men with typical common colds. This extraordinarily high rate was attained by using serial cultures on single individuals and intrafamily serologic diagnoses for persons whose throat cultures were negative for viruses. The studies show that it is possible to obtain viruses from common colds in Antarctica, and previous difficulties in doing so probably were related to storage and transportation problems. Efforts are being made to trace the chain of infection of the viruses through the McMurdo population during the WINFLY period.

H-19592

Dick, E.C., **Lack of increased susceptibility to colds in the McMurdo winter parties of 1975 and 1976,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.3-5, 6 refs.

Observations were conducted on WINFLY and winter-over personnel during the winter fly-in period at McMurdo in 1975 and 1976 in order to test the concept of increased susceptibility to infection after prolonged isolation. Early in Sep. the WINFLY men join a group that has been isolated since mid-Feb. (winter party) and there are no additional arrivals until the summer season opens early in Oct. Comparison of the data for the two years showed no apparent difference between the winter and the WINFLY populations with respect to susceptibility to and severity of colds. It would appear that the long isolation period of winter men does not make them especially susceptible to respiratory infection.

H-19593

Flynn, T.C., Fusch, L.W., Dick, E.C., **Colds and immunity in the 77 winter personnel at McMurdo Station and Scott Base, 1976,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.5-6, 7 refs.

Investigations of the incidence and prevalence of mild respiratory disease in isolated populations have generally shown that respiratory disease dies out in the isolated population within a few weeks and that immunity may decline. Observations of 66 wintering personnel at McMurdo and 11 New Zealand civilians at Scott Base from Feb. 14 to Aug. 40, 1976 indicated that respiratory disease did not die out during the winter period. Twenty-one individuals had 35 colds with the peak number occurring in June. The colds were mild. Further, no decline was noted in immunocompetence as determined by white cell counts or serum immunoglobulin levels.

H-19891

Shevshchenko, IU.S., Moshkin, M.P., Khriashcheva, N.IU., **Assessment of the possibility of satisfying the information requirement at an antarctic station** [Otsenka vozmozhnosti udovletvoreniia poznavatel'noĭ potrebnosti v usloviiakh zhizni na antarkticheskoĭ stantsii], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten',* 1977 No.96, p.59-65, In Russian. 10 refs.

Information deprivation results in frustration and has adverse psychological and physical effects. To what extent workers wintering over in Antarctic perceived themselves to be deprived or could be considered deprived by the researchers was investigated. The area of least hardship is probably news, both domestic and foreign. Daily news broadcasts from foreign and Soviet stations, newspapers and magazines, keep the workers informed of political and economic events. Keeping abreast of cultural, artistic, and literary offerings is more difficult. Movies are a great outlet, very popular and helpful in allowing fantasy to free the viewers from the isolation of their daily life. Contacts with family and friends at home are fairly frequent, either by radio contact or radiograms, but for some reason are not very satisfactory. Anticipating them seems to generate anxiety and tension, and during the conversations themselves the parties are distant, non-committal and tense. The lending library is heavily used, but lack of scientific and technical information is a common complaint among researchers.

H-19894

Sytov, A.B., **Effect of composition and characteristics of separate components of saliva on the oral cavity in Mirnyy Station wintering personnel** [Vliianie sostava i svoĭstv otdel'nykh komponentov smeshannoĭ sliuny na sostoianie polosti rta zimovshchikov observatorii Mirnyĭ], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten',* 1977 No.96, p.77-81, In Russian. 6 refs.

Mixed saliva undergoes changes in composition and characteristics as a result of physical and social adaptation to antarctic wintering over. The greatest changes in mineral and organic content of saliva occur in the first and last months of the tour of duty. Caries increases during these periods, as does the incidence of soft tissue pathologies. The rise in pathological changes in both hard and soft tissues of the mouth is correlated with oral pH, inorganic phosphorus concentration, and amylase activity. Qualitative and quantitative variations in mixed saliva and deterioration of stomatic health occur against the background of a general lowering of the immunological health of the patients.

H-20049

Oda, T., **Circadian rhythm in Antarctica** [Nyo kara mita etto seikatsu], *Polar news (Kyokuchi),* July 1975 No.21, p.12-20, In Japanese.

This study was undertaken to determine the effects of Antarctic light and temperature conditions on 17,21-dihydroxycorticosteroid excretion. 17-OHCS excretion fell into four patterns: normal diurnal excretion; normal nocturnal excretion; and two that differed from normal patterns. Thus 17-OCHS secretion is correlated not only to sleep time but also to light.

H-20143

Edholm, O.G., **Energy balance in man,** *Journal of human nutrition.* Dec. 1977 31(6), p.413-431, Refs. p.429-431.

This is a review article on nutrition and energy balance experiments in humans done by Edholm and his colleagues since 1950, when concern over nutrition was sparked by food rationing in Britain. The effect of cold climate living on energy intake, expenditure, and appetite has been studied from a variety of viewpoints. Energy intake and expenditure is quite high in Antarctica, where the climate causes average daily expenditure to reach about 15.0 MJ. This shows some seasonal variation, and weight gain during the more sedentary winter season is common. No effect of cold on resting metabolic rate has been documented; increased fat intake on traverse, when high-energy, low-volume fats are essential for compact supply transport, did not result in increased blood lipid levels.

H-20232

Rivolier, J., **Medical research in the Antarctic, particularly in the French austral and antarctic territories** [La recherche médicale dans l'Antarctique et plus particulièrement dans les terres australes et antarctiques françaises], Boulogne, [1978], 19p., In French.

Medical and psychological research, especially that carried out by the French, is summarized. Among the topics under study by French workers are psychological selection of candidates, psychosociology of small groups, effects of radiation, low temperature, darkness and other environmental factors on man, metabolic and sleep processes, and pathological research. A list of projects being carried out by other nations is also included.

H-20245
Tyrrell, D.A.J., **Aspects of infection in isolated communities,** *Ciba Foundation Symposium,* 1977 No.49, p.137-153, 9 refs.

Respiratory viruses are not generally carried by normal subjects and cannot persist in small isolated communities. When infection does occur, epidemics are seen, and the illness may be more severe than in the outside world. These points are illustrated by reference to studies on the island of Tristan da Cunha and stations of the British Antarctic Survey. (Auth.)

H-20325
Scientific Committee on Antarctic Research, **Working Group on Human Biology and Medicine,** *Polar record,* Jan. 1978 19(118), SCAR bulletin No.58, Jan. 1978, p.94-96.

The meeting of the human biology and medicine working group was held in Paris, July 15-17, 1977. The agenda included the Secretary's report and national reports; proposals for an international biomedical antarctic expedition, the development of comparable programs by the different countries operating in the Antarctic, and a study of accidents; and medical examination of official visitors. The group was concerned by problems for medical logistics that development of air traffic in the Antarctic could pose. Further it was decided to take measures geared toward the effective dissemination of information.

H-20345
Rivolier, J., **Medical care in French austral and antarctic territories** [L'organisation médicale dans les districts des terres australes et antarctiques françaises], *France. Ministère d'Etat chargé des départements et territoires d'outre-mer. Terres australes et antarctiques françaises,* Jan.-Mar. 1976 No.67, p.12-30, In French.

The medical program for French austral and antarctic territories is discussed. Problems characteristic of health care delivery in remote and widely separated areas are summarized; each station and each attending physician must be self-sufficient in both knowledge and supplies for routine and emergency situations. Serious cases are evacuated to Port-aux-Français, where the only fully equipped hospital is located. Recruitment of personnel for such responsible positions and stocking of stations require great care; some of the considerations are mentioned. Floor plans of the infirmaries on the French subantarctic islands are shown, and photographs of treatment rooms, labs, dental clinics and supply rooms are included.

H-20394
Schrader, G., **Soviet antarctic research with special consideration of medical and health problems** [Sowjetische Antarktisforschung unter besonderer Berücksichtigung medizinischer und hygienischer Probleme], *Zeitschrift für die gesamte Hygiene und ihre Grenzgebiete,* Nov. 1977 23(11), p.825-835, In German with English and Russian summaries. Refs. p.831-835.

The origins of modern antarctic research date back to the provisions laid down in the Antarctic Treaty of 1959, which contains guidelines on research work in that area. The treaty was preceded by the 3rd International Geophysical Year. The role of the Arctic and Antarctic Research Institute in Leningrad in the continuous research work being conducted by Soviet scientists and research teams from other states in Antarctica is stressed. After elucidating the working and living conditions of people taking part in expeditions, the author considers the special problems connected with providing medical services and with research work in antarctic isolation. He points out the associated tasks in his own field.

H-20435
Asahina, K., **Antarctic physiology** [Kyokuchi no seiri], *Polar news (Kyokuchi),* July 27, 1978 No.27, p.26-29, In Japanese.

Medical history in Antarctica is briefly reviewed and common pathological states and their etiology discussed. Since international research on low temperature adaptation was begun in 1950, the first and second symposia on Antarctic Medicine at Showa Station were held in Kyoto (1961) and Kobe (1971), respectively. A standing committee on environmental science existed from 1973 to 1975, and the results were discussed at the Symposium on Antarctic Environmental Science at Showa Station held in Tokyo in 1976. Findings on low temperature adaptation, physical fatigue and psychological strain had led to the conclusion that the projected 2,000 km traverse over the Ross Ice Shelf is feasible.

H-20514
Shearman, D.J.C., **Vitamin A and Sir Douglas Mawson,** *British medical journal,* Feb.4, 1978 1(6108), p.283-285, Comments by C.T. Brown, Ibid. 1(6113):650, Mar.11, 1978.

The author argues that the symptoms and problems recorded in diaries and letters of the Mawson expedition indicate that Mawson and others in his group suffered from hypervitaminosis A, and that Mertz, his colleague, died of it.

H-20614
Riabinin, I.F., Adamenko, V.N., **Experimental use of computers for data analysis in medical geographical research** [Opyt ispol'zovaniia EVM pri analize materialov mediko-geograficheskikh issledovaniĭ], *Problemy Arktiki i Antarktiki,* 1978 No.54, p.84-87, In Russian. 5 refs.

Data gathered daily by physicians, meteorologists and geophysicists throughout the austral winter were analyzed clinically and mathematically. Definite patterns emerged when physiological test results were correlated to weather and geophysical data. However, individual differences play a large role in relationships between medical and biological indicators and heliogeophysical factors.

H-20730
Soroko, S.I., **Variations in frequency spectra on EEG's of antarctic workers** [Izmenenie chastotnogo spektra elektroentsefalogrammy poliarnikov antarkticheskoĭ stantsii], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten',* 1978 No.98, p.83-89, In Russian. 15 refs.

EEG's of 120 winter-over personnel were taken at various stages of the duty period. The results were analyzed by computer. The acclimatization process was marked by definite changes in the activity of the CNS as reflected by the EEG's. In the early stages nonspecific brain functions become more active, but later cortical irritability and non-specific activity both decline and a lower level of CNS functioning is maintained until the end of the duty period. After return to temperate latitudes, it requires about 10 months for CNS activity to resume its pre-antarctic pattern.

H-20774
Klur, V.IU., **Antiviral resistance under antarctic winter conditions** [Sostoianie protivovirusnoĭ zashchity organizma v usloviiakh antarkticheskoĭ zimovki], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1978 Vol.67, p.101-108, In Russian. 15 refs.

Viral resistance was studied at Leningradskaya Station on 15 people over a 2-year period. There was a periodization of the adapta-

tion process, the features of which were related to a decrease in external antigen stimulation. Flu and respiratory viruses persisted throughout the isolation period.

H-20775

Klur, V.IU., **Necessity for activating immune resistance under antarctic conditions** [O neobkhodimosti aktivatsii immunorezistentnosti organizma v usloviiakh Antarktidy], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1978 Vol.67, p.109-116, In Russian. 13 refs.

Several measures were taken to increase immune reaction in winter-over personnel. The nature or reactions to staphylococcal antitoxin and live flu vaccines were studied. The results indicate an improvement in resistance to upper respiratory and staphylococcal infections during reentry in vaccinated subjects.

H-20780

New Zealand. Department of Scientific and Industrial Research. Antarctic Division, **Antarctic first aid manual,** Christchurch, Aug. 1978, 67p., 7 refs.

This manual is intended for the direction and guidance of all New Zealand personnel in Antarctica. It contains sections on stoppage of breath and resuscitation, bleeding and wounds, shock and exposure, burns, frost bite, broken bones and dislocations, poisoning, medical emergencies, eye injuries, and dental health. Five additional sections discuss various first aid kits, survival gear and facilities. Instructions for measuring wind chill factor and administering mouth-to-mouth resuscitation are appended.

H-20866

Maĭstruk, P.N., Sokolova, A.G., **Assimilation by the organism of aminoacids of the protein product paste "Ocean"** [Usvoenie organizmom aminokislot belkovogo produkta pitaniia pasty "Okean"], *Vrachebnoe delo,* 1974 No.9, p.142-147, In Russian with English summary. 4 refs.

The rate of absorption of a paste produced from small Atlantic prawn found in antarctic waters was studied in experiments on white rats. Results indicate that maximum entrance of aminoacids into the blood begins 30 minutes after administration of the paste, as opposed to 1-2 hours after a meat homogenate is fed to the rats. This shows intensive digestion and absorption of the protein products in the gastro-intestinal tract. It was also found that cystine is the most accessible aminoacid in this paste. It is concluded that the rate and completeness of digestion and absorption and the accessibility of sulfur-containing aminoacids make the "Ocean" paste a biologically valuable protein product.

H-20876

Taylor, A.J.W., **Summary of psychological effects of antarctic service,** *New Zealand antarctic record,* 1978 1(2), p.31-34, 9 refs.

The results of observations of the psychological effects of antarctic service, focusing primarily on winter-over teams, are summarized. Three main attributes distinguished those who did well in the Antarctic: their ability, stability, and relative compatibility. The first concerned their work, the second their emotional maturity, and the third the extent to which they were able to get on with other people. The data reflected no basic personality changes after wintering over. In order to reconcile this finding with those of various observers who have reported changes, it may be concluded that after winter-over men neither change their basic personalities nor basic capacity to respond; rather, it is their customary mode of interpersonal behavior that changes.

H-20877

Barabasz, A.F., **Electroencephalography, isolation and hypnotic capability at Scott Base,** *New Zealand antarctic record,* 1978 1(2), p.35-42, 23 refs.

The purpose of this study was to investigate the stability of EEG alpha and hypnotizability employing invited subjects, naive to the experimental focus, who experienced a prolonged, but limited restriction of sensory and perceptual stimulation. The Ss consisted of nine men wintering over at Scott Base in 1977. The study supports the hypothesis that a significant relationship exists between hypnotizability and EEG alpha density. A significant increase in alpha density and hypnotizability was found following the restriction of sensory and perceptual input for an extended period of time during winter-over. This finding supports the view that environmental factors can significantly influence hypnotizability and waking eyes closed alpha density. The study fails to support the Dumas (1977) conclusion that the personality variable of subject self-selection, rather than environmental factors, is primarily responsible for alpha-hypnotizability correlations.

H-20985

Matusov, A.L., **Morbidity of participants in the 13th Soviet-Antarctic Expedition,** *U.S. Army Medical Intelligence and Information Agency. Translation,* June 1975 USAMIIA-K-5643, 14p., ADB-013 077L, For Russian original see H-12995.

Morbidity among members of the Thirteenth Soviet Antarctic Expedition is correlated with age, job, and assigned station and is compared with morbidity during the three previous expeditions. Breakdowns according to disease type, length of disease, and time of occurrence are also tabulated.

H-20986

Il'in, E.A., Poggenpol, V.S., **Influence of a stay lasting several months under conditions of hypoxia, hypokinesia and isolation on the temperature of the body and skin surface.,** *U.S. Army Medical Intelligence and Information Agency. Translation,* 1975 USAMIIA-K-5694, 9p., ADB-013 080L, For Russian original see H-12994.

Sixteen members of the winter crew at Vostok Station were studied. The tests were performed during the sea voyage from Leningrad to the Antarctic and also during the second, fourth, sixth, seventh and ninth months of wintering. During the experiment, each subject lay down in bed; after ten minutes measurement of the temperature of the skin surface began. Thermometry performed prior to acclimation of the subjects to Vostok Station indicated that the temperature of the body at skin surface in the subjects of all three groups corresponded to normal levels established for healthy persons. A month after their arrival at Vostok Station, the members of all three groups exhibited a drop in body temperature of 0.2-0.3 deg, as well as a drop in the skin surface temperature by an average of 1.0-1.5 deg. (Auth.)

H-20988

Tikhomirov, I.I., **Food ration characteristics of winters at antarctic stations,** *U.S. Army Foreign Science and Technology Center. Translation,* Jan. 29, 1975 FSTC-HT-23-0970-74, 17p., ADB-005 141L, For Russian original see G-17419.

The specificity of natural, social and everyday life conditions prevailing at antarctic stations preconditions characteristic deviations in the metabolism of individual groups of nutrients in polar explorers during their acclimatization. A rational nutrition pattern may help in a large measure to normalize and facilitate the course of acclimatization processes in the organism. Materials expounded in the article outline principal ways of rationalizing the nutrition pattern for polar explorers. (Auth.)

H-21031
Matusov, A.L., ed, Riabinin, I.F., ed, Klopov, V.R., ed, **Human adaptation to unusual living conditions** [Adaptatsiia cheloveka v osobykh usloviiakh obitaniia], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1978 Vol.356, 160p., In Russian. For individual articles see G-21045, and H-21032 through H-21047.

This collection of papers deals with human adaptation to living in polar regions. Results of studies in clinical physiology, clinical biochemistry, psychology and sanitation are reported.

H-21032
Kaznacheev, V.P., Deriapa, N.R., **Problems of adaptation and antarctic support systems** [Aktual'nye voprosy adaptatsii i sistemy zhizneobespecheniia cheloveka v Antarktide], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1978 Vol.356, p.5-10, In Russian. 11 refs.

Results of studies on human adaptation carried out on temporary antarctic populations over the 20-yr period of the Soviet Antarctic Expedition are presented. The criteria of the analysis were the methodological principles of the *Human Adaptation* program and the conception of support systems worked out by scientists of the Siberian branch of the Soviet Academy of Medical Sciences. Analysis of the adaptation process in antarctic personnel was approached from physiological, social and psychological standpoints. A basis for optimizing health care was developed.

H-21033
Matusov, A.L., **Social and health aspects of human adaptation in polar regions** [Sotsial'no-gigienicheskie aspekty adaptatsii cheloveka v poliarnykh raĭonakh], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1978 Vol.356, p.11-16, In Russian.

Observations on the health of arctic and antarctic expedition members (physical state, subjective state, morbidity) are reported. The basic factors impinging on people during the acclimatization period result from severe climate, unusual living and working conditions, and small-group isolation. Polar workers were found to be a very healthy lot. Morbidity figures broken down by type of complaint are given for the Soviet Antarctic Expedition from 1956 to 1972. Scientifically sound practical recommendations for improving the health and living conditions and medical care are offered.

H-21034
Vasilevskiĭ, N.N., **Environment and psychophysiological aspects of human adaptation in Antarctica** [Ekologo-psikhofiziologicheskie aspekty adaptatsii cheloveka v Antarktide], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1978 Vol.356, p.17-26, In Russian. 38 refs.

Human physiology in relation to the antarctic environment is discussed, extreme local conditions are appraised in terms of physiological effect, and the problem of individual differences in ability to adapt and endure considered.

H-21035
Soroko, S.I., **Description of human acclimatization in the Antarctic using psychological and physiological study results** [Kharakteristika adaptatsii cheloveka v Antarktide po dannym psikhofiziologicheskogo issledovaniia], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1978 Vol.356, p.27-42, In Russian. 42 refs.

Data gathered during complex psychophysiological studies of adaptational restructuring of various functions, of cerebral bioelectrical and higher nerve center activity are analyzed. Work capability of the subject at successive stages of the winter period is described. It is demonstrated that man does not completely adapt to antarctic conditions in the course of one wintering. The nature of adaptive restructuring of systems and their resistance to natural and social factors depends on individual differences and personality type and, to a large extent, are determined by the flexibility and stability of CNS regulatory mechanisms of homeostasis.

H-21036
Riabinin, I.F., **Results of clinical and biochemical studies of acclimatization in workers in coastal Antarctica** [Itogi kliniko-biokhimicheskikh issledovaniĭ adaptatsii poliarnikov v pribrezhnoĭ Antarktide], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1978 Vol.356, p.43-46, In Russian.

Data on subjective mood, cardiovascular and respiratory condition, and other physiological indices in Mirnyy Station personnel during the antarctic winter are presented. Biochemical data on protein, fat, carbohydrate, water, salt and vitamin metabolism are included. Based on these clinical and biochemical studies, definite patterns and changes in polar workers during acclimatization in coastal locations emerge.

H-21037
Shurygin, D.IA., Alekseeva, N.M., Karlov, V.A., IAkovlev, V.A., **Functional hormonal activity of the adrenals and sympathetic adrenal system during antarctic acclimatization** [Funktsional'noe sostoianie gormonal'noĭ aktivnosti nadpochechnikov i simpato-adrenalovoĭ sistemy u poliarnikov v protsesse akklimatizatsii v Antarktide], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1978 Vol.356, p.47-52, In Russian. 16 refs.

Indicators of adrenal and sympathetic adrenal system hormonal activity are studied. Changes occasioned apparently by alteration in central regulatory mechanisms leading mainly to variations in adrenocorticotropic hormone production at different points in the winter are noted.

H-21038
Shevchenko, IU.S., **Cerebral blood flow adaptation to high-altitude hypoxia in Antarctic workers** [Cherty adaptatsii krovoobrashcheniia mozga k vysokogornoĭ gipoksemii u poliarnikov v Antarktide], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1978 Vol.356, p.53-60, In Russian. 9 refs.

Rheography was used to evaluate cerebral blood circulation in personnel at Mirnyy and Vostok Stations and those on traverse. Characteristics of cerebral hemodynamics (with subjects lying down and also with an orthostatic probe) were studied from the viewpoint of rate of acclimatization. It appears that not only a gradual increase in altitude but also the previous wintering-over at Mirnyy were reflected in cerebral blood flow parameters.

H-21039
Moshkin, M.P., Shevchenko, IU.S., D'iachkov, V.A., **Circadian rhythm in human blood circulation in Antarctica** [Tsirkadnye ritmy krovoobrashcheniia u cheloveka v Antarktide], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1978 Vol.356, p.61-67, In Russian. 6 refs.

It is well established that the circadian rhythm of basic hemodynamic parameters—filling time and arterial pressure—do not change during wintering. There is a lack of agreement between chronology and inotropic regulation of cardiac activity. The circadian rhythm of blood circulation adapts more rapidly during shift work, when the subject is wakened both during the night and day, than during normal photoperiods. Varying effectiveness of external synchronizers on the circadian rhythm of individual hemodynamic processes is the reason for desynchronization of the internal cardiovascular system.

H-21040
Gagarinova, V.M., **Respiratory infections in arctic and antarctic personnel** [Respiratornye infektsii u poliarnikov v Arktike i Antarktide], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1978 Vol.356, p.78-81, In Russian. 6 refs.

The occurrence of acute respiratory and subclinical infections in personnel on arctic drift stations and in the Antarctic is well established. For the first time some light is shed on etiology. The peculiar distribution of contagion at the end of the isolation period points to a significant change in the organism's immune reactions and activization of latent infection by extreme environmental conditions.

H-21041
Biziuk, A.P., **Personality testing in psychosocial research at polar stations** [Ob ispol'zovanii lichnostnogo testa pri sotsial'no-psikhologicheskom obsledovanii sotrudnikov poliarnykh stantsiĭ], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1978 Vol.356, p.82-88, In Russian. 26 refs.

Individual psychological indicators of sociometrically valid selection of wintering personnel are examined with the help of Cattell's 16-factor approach. Correlation analysis shows that there is a statistically significant agreement between the items on the test and sociometric indices.

H-21042
Biziuk, A.P., **Psychosocial research at Vostok during the 19th SAE** [Sotsial'no-psikhologicheskie issledovaniia na stantsii Vostok v 19-ĭ SAE], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1978 Vol.356, p.96-109, In Russian. 22 refs.

Statistical relationships between psychosocial and personality indicators for personnel at Vostok Station are discussed. In the early part of the winter psychosocial adjustment depends on living conditions and emotional stability, in the mid-winter on work and adaptability to unusual conditions, whereas by the end of the winter intellectual characteristics of isolated personnel emerge as a significant factor.

H-21043
Bogoslovskiĭ, M.M., Krivo, V.M., **Studying personality and psychosocial adjustment in polar workers using a test** [Issledovanie kachestv lichnosti i sotsial'no-psikhologicheskogo statusa u poliarnikov s pomoshch'iu lichnostno-sotsial'nogo testa], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1978 Vol.356, p.110-117, In Russian. 6 refs.

It is well established that at polar stations with 60-80 persons in residence, when optimal provision for living, working, and recreation is made, group relations improve as the winter progresses, in spite of extreme natural conditions. By using psychosocial research methodology, deterioration in group dynamics can be anticipated, neurotic reactions forestalled and the psychological climate influenced for the better. Mirnyy Station residents evaluated themselves and each other at the beginning and end of their stay. The results are presented in graphs. Three groups were studied separately: radio technicians, meteorologists, and geophysicists.

H-21044
Sytov, A.B., **Clinical features of stomatological disease in antarctic personnel** [Klinicheskie osobennosti stomatologicheskikh zabolevaniĭ u poliarnikov v Antarktide], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1978 Vol.356, p.118-126, In Russian. 16 refs.

Dental caries and periodontal disease—their incidence and clinical course—were studied in members of the 19th Soviet Antarctic Expedition. Both problems reached significant levels and the difference in early winter and late winter incidence was marked. Low temperature ambient air hastens pathological processes in both hard and soft oral tissue.

H-21046
Dolganov, L.V., **Time limit for outdoor activity in Antarctica as a function of wind speed and air temperature** [O vremeni nakhozhdeniia cheloveka vne pomeshcheniia v Antarktide v zavisimosti ot vetra i temperatury vozdukha], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1978 Vol.356, p.138-144, In Russian. 6 refs.

The role of air temperature and wind speed in heat loss in polar workers is studied. The time limits for outdoor activity at Komsomolskaya, Sovetskaya and Vostok Stations are illustrated by formulas and graphs.

H-21047
Kosachev, I.D., Gusev, V.P., **Brief geographical and medical description of Leningradskaya Station** [Kratkoe mediko-geograficheskoe opisanie stantsii Leningradskoĭ], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1978 Vol.356, p.145-147, In Russian. 5 refs.

Observations are made on the climate and living conditions at Leningradskaya Station. 22.5% of the medical consultations there are occasioned by trauma, 23.4% by colds and respiratory problems and 19% by dental and stomatological complaints.

H-21072
Vallacher, R.R., Seymour, G.E., Gunderson, E.K.E., **Relationship between cohesiveness and effectiveness in small isolated groups: a field study,** *U.S. Naval Health Research Center. Report,* July 1974 No.74-50, 27p., ADA-038 375, 16 refs.

The relationship between cohesiveness and group effectiveness among groups of men at U.S. antarctic research stations was investigated. Cohesiveness indices, based upon positive intermember attraction, were negatively correlated with incidence of emotional symptomatology within station groups, but were, for the most part, unrelated to supervisors' and group members' perceptions of performance. Indices, based upon negative intermember attraction (conflict), in contrast, were significantly related to perceptions of performance, particularly those of supervisors, but were unrelated to symptomatology. The differential importance of positive and negative in-

termember attraction for different aspects of group functioning was discussed, and the probable moderating role of task versus social-relations orientations in the cohesiveness-effectiveness relationship was suggested. (Auth.)

H-21074

Gunderson, E.K.E., Ryman, D.H., **Group homogeneity, compatibility and accomplishment,** *U.S. Navy Medical Neuropsychiatric Research Unit. Report,* 1967 No.67-16, 20p., ADA-738 011, 16 refs.

The relationships of the heterogeneity on personal history and personality variables to group compatibility and accomplishment were studied in 15 groups of scientists and Navy men who manned scientific stations in Antarctica. Group effectiveness criteria were mean scores on questionnaire items which described the group as a whole and which were administered to group members after several months of isolation and confinement. Heterogeneity (group standard deviations) on urban-rural residence, importance of hobbies and recreational interests, and personality needs most relevant to group integrity and achievement were significantly related to group performance. These exploratory findings should help develop useful approaches to the group assembly program. (Auth.)

H-21119

Gunderson, E.K.E., **Group compatibility in restricted environments,** *U.S. Navy Medical Neuropsychiatric Research Unit. Report,* 1967 67-24, 15p., AD-738 012, Presented at the APA symposium on factors affecting team performance in isolated environments, Sep. 5, 1967.

Likeability and compatibility are considered important concepts in predicting group effectiveness in isolated environments. In the antarctic setting group compatibility and group accomplishment are highly related. Formality of group structure had a nonlinear relationship with group compatibility; groups which were either clearly formal or informal were more compatible than groups of apparently ambiguous or inconsistent structure. Analyses of the interactions of role, personality, and group attributes in predicting group compatibility have suggested useful approaches to study of the group assembly problem in isolated environments. (Auth.)

H-21120

Arthur, R.J., **Success is predictable,** *Military medicine,* June 1971 136(6), p.539-544, AD-729 998, 7 refs.

A discussion is presented of clinical vs. actuarial prediction. Samples are chosen from research work primarily at the U.S. Navy Medical Neuropsychiatric Research Unit, San Diego, showing the influence of demographic and personal history characteristics on success in the Navy and in various naval assignments, such as antarctic duty. There is also a discussion on the use of life events to predict illness and a discussion of the development of actuarial tables for prognostic purposes. (Auth.)

H-21141

Tashpulatov, R.IU., Rodina, R.I., Demidova, N.V., **Peripheral blood indicators in wintering 15th SAE personnel at Vostok** [Izuchenie pokazateleĭ periphericheskoĭ krovi poliarnikov stantsii Vostok v period raboty piatnadtsatoĭ ekspeditsii], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1977 Vol.64, p.100-104, In Russian. 14 refs.

Acclimatization at Vostok Station under hypoxic conditions leads to an increase in hemoglobin and erythrocyte content in peripheral blood. However, hemoglobin level even in hypoxia is also dependent on solar ultraviolet radiation. At Vostok there is, in addition, change in the relationships between leukocyte elements, reflected in a drop in neutrophiles with rod-like or segmented nuclei, an increase in eosinophiles and monocytes and a tendency for lymphocytes to increase. Dynamic variations in peripheral blood parameters do not significantly affect the body state.

H-21142

Matusov, A.L., **Morbidity among members of the 15th Soviet Antarctic Expedition** [Zabolevaemost' uchastnikov piatnadtsatoĭ sovetskoĭ antarkticheskoĭ ekspeditsiĭ], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1977 Vol.64, p.105-114, In Russian.

Morbidity in the 15th SAE is analyzed. Relation of morbidity to age, profession and work assignments is examined. It is concluded that health is affected by environment and living conditions. Chronic ailments, subclinical before arrival in Antarctica, are aggravated by polar living.

H-21143

Shevchenko, IU.S., **Motor system dynamics and adaptational features in wintering antarctic personnel** [Dinamika i osobennosti adaptatsionnykh perestroek dvigatel'nykh funktsiĭ u zimovshchikov antarkticheskoĭ stantsii], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1977 Vol.64, p.115-129, In Russian. 22 refs.

The motor system of Mirnyy Station wintering residents was studied over a period of 10 months. Muscle dynamics and tremors were monitored by instruments. The author believes that the periodic nature of adaptational restructuring is connected to various levels of expedition activity, to the length of tour of duty and to the season. Four periods are delineated by functional level and various features of motor activity. A possible mechanism for motor function changes in response to social and natural conditions, length of tour, and psychological adaptation is discussed.

H-21144

Shevchenko, IU.S., Polosatov, M.V., **Assessing thermoregulation in wintering personnel at a coastal antarctic station** [Otsenka sostoianiia termoreguliatsii poliarnikov v usloviiakh zimovki na pribrezhnoĭ antarkticheskoĭ stantsii], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1977 Vol.64, p.130-136, In Russian. 9 refs.

Thermal receptor activity was studied over a period of several months, both at comfortable room temperature and under localized chilling, to determine change in thermal regulation in polar workers. There is a definite difference in the level of thermoreceptor activity and response to cold in groups of subjects whose work entails different exposures to cold. The criteria of adaptation for thermoregulation are a decreased number of functioning receptors at room temperature and decreased response to cold with a marked tendency for these indicators to continue to drop with time.

H-21145

Polosatov, M.V., Shevchenko, IU.S., **Effect of extreme antarctic conditions on the psychosomatic state of personnel** [Vliianie ekstremal'nykh faktorov Antarktidy na psikhosomaticheskiĭ status poliarnikov], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1977 Vol.64, p.137-141, In Russian. 12 refs.

Psychosomatic state in wintering personnel in Antarctica is monitored and referred to natural and social factors. Psychosomatic symptoms appear as a result of both personality and work-related problems. Particularly pronounced upsets occur in people who react strongly to social situations both emotionally and behaviorally.

H-21146
Shevchenko, IU.S., Matusov, A.L., Gerbovich, V.I., **Transmitting ECG's from Antarctica to Moscow by radio** [Opytnye peredachi elektrokardiogramm iz Antarktiki v Moskvu po radio], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1977 Vol.64, p.142-144, In Russian. 3 refs.

A general discussion is presented of successful transmission of electrocardiograms from a number of points in Antarctica to Moscow by radio. Initially standard medical and radio equipment and technology were used; later an ACG, amplified and frequency-modulated by means of a special portable device, was recorded on magnetic tape and then transmitted by radiotelephone.

H-21197
Ryman, D.H., Gunderson, E.K.E., **Factors affecting the stability of job attitudes in long-term isolated groups,** *U.S Navy Medical Neuropsychiatric Research Unit. Report,* Jan. 1970 NMRU-70-13, 14p., AD-766 452, 3 refs.

Job attitudes of participants in the U.S. Antarctic Research Program were measured on three occasions over 18 months. Subjects were 231 Navy enlisted men and 140 civilian scientists and technicians. Job morale and job importance measures were compared for the scientist group and the navy group. Navy men appeared to show significant deterioration in morale through the winter while scientists did not. Occupational role was seen to be an important determinant of job attitudes during long-term isolation. (Auth. mod.)

H-21198
Gunderson, E.K.E., **Individual behavior in confined or isolated groups,** *U.S. Navy Medical Neuropsychiatric Research Unit. Report,* Jan. 1970 NMRU-70-41, 20p., AD-766 385, 40 refs.

Psychological studies conducted at polar stations are reviewed, and research conducted at antarctic stations during the past decade is summarized. The development of individual performance and adjustment measures is described in some detail, and the evaluation of a wide array of screening assessment methods in this setting is attempted. A high degree of specificity in the relevance of various predictor variables for different performance criteria and different occupational groups is demonstrated. A moderate degree of success has been achieved in identifying biographical and personality data that contributes to prediction of adjustment in antarctic groups. (Auth.)

H-21214
Bodey, A.S., **Changing cold acclimatization patterns of men living in Antarctica,** *International journal of biometeorology,* Sep. 1978 22(3), p.163-176, Refs. p.174-176.

Responses to a standard cold stress of 10C for 2 h applied before (Melbourne) and four times during a year in Antarctica were observed in 10 adult male Caucasians, 7 of whom were retested after returning from Antarctica. An early form of cold acclimatization developed within a month of arriving in Antarctica in which the cold stress response was characterized by cooler peripheral temperatures than in the pre-antarctic series. This was replaced by a late form in which the rectal temperature was cooler and peripheral temperatures warmer than in Melbourne. An improved peripheral rewarming rate was associated with the late form. The reduction in plasma cortisol concentration at the end of the cold stresses in Antarctica compared with those in Melbourne was a further indication of the establishment of cold acclimatization. An increased delay in the onset of shivering, a lowered skin temperature at the onset of shivering, and a reduced noradrenaline response was observed in the late antarctic series. Adrenaline excretion during the cold stress increased in the later series, but the rise from the pre-stress level remained fairly constant. (Auth. mod.)

H-21241
Schrader, G., Klinker, L., **Long-term oxygen consumption tests at constant physical activity on persons wintering over in the Antarctic** [Langzeituntersuchungen des Sauerstoffverbrauchs bei gleichbleibender körperlicher Aktivität an einem Überwinterer in der Antarktis], *Das deutsche Gesundheitswesen,* 1978 33(48), p.2268-2273, In German with English summary.

The oxygen consumption of a person was measured three times a day in relation to his physical activity in terms of the number of steps taken during the 20th Soviet Antarctic Expedition. The highest oxygen consumption was measured at the beginning of the winter, subsequently the consumption dropped and reached the lowest level when the sun was at its low point. As the day became longer, the consumption of oxygen began increasing again slowly. A similar pattern was observed in a considerable number of physiological readings in relation to time. The question as to whether the light acts through a vegetative, a hormone or a psychic mechanism remains open. (Auth.)

H-21245
Owens, A.G., **Assessment of individual performance in small antarctic groups. Part 1. OIC's rating scales,** *Australia. Army. 1 Psych. Research Unit. Report,* Aug. 1966 No.3/66, 18p., 12 refs.

The appointed leaders (OIC's) of eight parties wintering at four different antarctic stations during the years 1960 and 1961 rated each of their men on twelve scales, two of which acted as criterion measures of the two task areas. The ratings obtained were intercorrelated with each other and with criterion rating measures. Five factors were extracted and a varimax rotation performed. Results suggest that the scales were effective measures of the criteria. Four factors were found to account for a sizeable proportion of the variance and these were interpreted to refer to task, intrapersonal, and interpersonal aspects of performance. The criteria and correlates of performance in the field, particularly those relating to interpersonal interaction, were shown to differ from those relating to overall acceptability, indicating that the measures and prediction of performance must take into account the varieties of task against which men are to be assessed. (Auth.)

H-21246
Owens, A.G., **Assessment of individual performance in small antarctic groups. Part 2. Ratings on the Leary interpersonal checklist,** *Australia. Army. 1 Psych. Research Unit. Report,* Aug. 1967 No.9/67, 9p., 6 refs.

Leaders of parties of the Australian National Antarctic Research Expedition rated their men on both the Leary Interpersonal Checklist (ICL) and on a set of criterion performance scales. Correlations between scores on the ICL and the performance scales indicated that some of the former are related to three performance dimensions labelled task, interpersonal, and intrapersonal. The love score on the ICL is shown to be related to the interpersonal dimensions, and the dominance score to both the task and intrapersonal dimensions. In addition, scores on the measure of responsible-hypernormal behavior were related to task and interpersonal aspects of performance. Scores on the measure of rebellious-distrustful behavior were related to interpersonal and intrapersonal aspects. (Auth.)

H-21247
Owens, A.G., **Some biographical correlates of assessed performance in small antarctic groups,** *Australia. Army. 1 Psych. Research Unit. Research report,* Oct. 1968 No.12-68, 24p., 11 refs.

The relationship of leaders' performance assessment to a number of biographical situational variables of men in small antarctic groups

was examined. It was found that age was negatively related to performance in the field, marital status (married) was negatively related to an overall criterion. There was a suggestion that the relationship of ordinal family position, stability of family upbringing and previous antarctic experience with performance was curvilinear. Station position (i.e. primary task requirement) appeared to bear little linear relationship to assessed overall performance but moderated the effects of previous experience, and assessments of field trip value. (Auth.)

H-21427

Dusmukhamedov, N.S., Tashpulatov, R.IU., Bondarenko, V.M., Pereverzev, N.A., **Identification and biological characteristics of strains of psychrophilic bacteria isolated in diarrhea of polar workers and from antarctic lake water** [Identifikatsiia i biologicheskaia kharakteristika shtammov psikhrofil'nykh bakteriĭ, vydelennykh pri diaree poliarnikov i iz vody ozer Antarktidy], *Zhurnal mikrobiologii epidemiologii i immunobiologii,* 1978 No.11, p.55-59, In Russian with English summary. 14 refs.

Bacteria of the *Klebsiella* genus and psychrophilic microbes affiliated morphologically and biochemically with *Bac. psychrosaccharolyticus* were isolated from diarrhetic feces of workers stationed at Novolazarevskaya Station and from the nearby lake from which the water supply for the station is taken. One of the strains, that found in human intestines, proved pathogenic, i.e., it liquefied gelatin, was cyctotoxic to Hep-2 cells, and caused 50% mortality in chicks.

H-21435

Tashpulatov, R.IU., Guseva, E.V., Petrosov, V.V., **Effect of extreme antarctic conditions on blood serum protein composition in polar workers** [Vliianie ekstremal'nykh faktorov Antarktidy na belkovyĭ sostav syvorotki krovi poliarnikov], *Zhurnal mikrobiologii, epidemiologii i immunobiologii,* 1978 No.2, p.19-26, In Russian with English summary. 6 refs.

Extreme conditions of the Antarctic continent cause adaptive changes in the protein composition of human blood, expressed in the increased level of blood globulin fraction. The detected reduction in the beta-1-A-globulins in the blood indicates a reduction of the infection immunity level. An increase of blood transferrin content of polar explorers serves as a response of the organism to the influence of hypoxic hypoxia. (Auth.)

H-21457

Moshkin, M.P., Shevchenko, IU.S., Saenko, A.F., **Reaction of human thermoregulatory system to local chilling at different periods of the antarctic winter** [Reaktsiia termoreguliatornoĭ sistemy cheloveka na lokal'noe okhlazhdenie v raznye periody antarkticheskoĭ zimovki], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1978 Vol.69, p.63-68, In Russian. 16 refs.

The effect of winter conditions on processes affecting human homeostasis was studied. After cooling the hand in five subjects, bioelectrical muscle activity in the neck, peripheral thermoreception, arterial pressure and other parameters were recorded. Results are presented in tables and graphs.

H-21458

IAkovlev, V.A., **Functional cardiovascular state in expedition members during voyage and wintering over at Leningradskaya Station** [Funktsional'noe sostoianie serdechno-sosudistoĭ sistemy u poliarnikov v period morskogo perekhoda i zimovki na stantsii Leningradskoĭ], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1978 Vol.69, p.69-79, In Russian. 19 refs.

Circulation was investigated in 11 members of a 4-month cruise in the Southern Ocean and at various times during the winter at Leningradskaya Station. Reversible shifts in hemodynamic indicators attesting to definite changes due to acclimatization were noted. Apparently when wintering over is preceded by a long tour at sea, the acclimatization period begins with entry into antarctic waters.

H-21466

Matusov, A.L., **Morbidity in the wintering party** [Sostoianie zdorov'ia uchastnikov zimovki], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1978 Vol.69, p.140-143, In Russian.

Morbidity among 19th SAE wintering party members and its correlations to type of work were investigated. 76.6% of all initial consultations were due to 6 types of complaints—toothache, trauma, muscle and blood vessel pain, skin diseases, peripheral nervous system problems and neurosis.

H-21606

Dick, E.C., **Respiratory virus transmission at McMurdo Station and Scott Base (New Zealand) during the winter fly-in period, 1977,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.170-171, 4 refs.

Report is made of the transmission patterns of the rhinovirus McM88 at McMurdo during WINFLY 1976, the rhinoviruses R67 and R86 at Scott Base during WINFLY 1977, and adenovirus 21 at McMurdo Station during WINFLY 1977. Although the populations were highly susceptible, respiratory illness transmission apparently required close prolonged contact.

H-21607

Muchmore, H.G., Parkinson, A.J., Scott, E.N., Scott, L.V., Miles, J.A.R., **Respiratory virus infection late in isolation at the South Pole,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.171-172, 2 refs.

Successful virus recovery through the use of tissue culture monolayers has been accomplished. More than 30 isolates have been recovered and identified (parainfluenza viruses 1 and 3, rhinovirus, and herpes virus. Initial results of hemagglutination-inhibition testing of 1976 sera show that antibody titer rises to parainfluenza viruses 1 and 3. The demonstration of symptomatic illness, accompanied by specific serum titer rises in symptomatic and asymptomatic personnel, provides strong evidence for a persisting virus and its reappearance during the isolation period. This observation has far-reaching epidemiologic significance. In order to prove this theory, a winter period tissue culture capability has been established for the recovery of viruses during the isolation period.

H-21707

Deriapa, N.R., Matusov, A.L., Tikhomirov, I.I., **Human adaptation and health in Antarctica** [Adaptatsiia i zdorov'e cheloveka v Antarktide], *Antarktika; doklady komissii,* 1978 No.17, p.237-248, In Russian. 22 refs.

An overview and the major findings of research by soviet physicians in Antarctica over the past 20 years is given. The history of the development and organization of medical research at soviet antarctic stations is reviewed; in the early years medical work was not part of the research program. Results are reported in the following categories: mental health problems during adaptation; physiology and clinical features of acclimatization; morbidity of polar workers; and health care delivery to polar expeditions. The most promising areas for further study are mentioned.

H-21708
Tashpulatov, R.IU., Guseva, E.V., Evdokimov, V.V., Petrosov, V.V., **Human immunology under antarctic conditions** [Sostoianie immuniteta cheloveka v ekstremal'nykh usloviiakh Antarktidy], *Antarktika: doklady komissii*, 1978 No.17, p.249-267, In Russian. 24 refs.

Published results and the authors' own findings on the immune response in animals in Antarctica and on changes in immunity in humans are reviewed. Under extreme antarctic conditions, *i.e.*, nearly complete absence of microbes at stations far inland, cell and body immunity in man undergoes sharp variations, which may account for the outbreak of endogenous infections.

See also:
B-20526 B-20560 B-20831 B-20971 B-20977 B-21232 B-21249
G-19442 G-19445 G-20318 G-20967 G-20970 G-20972
G-20973 G-20976 G-20990 G-21045 I-19794

I. METEOROLOGY

I-19273
Trenberth, K.E., **Fluctuations and trends in indices of the southern hemispheric circulation,** World Meteorological Organization. Symposium on Long-Term Climatic Fluctuations, Aug. 1975. Proceedings, Geneva, 1975, p.243-253, WMO No.421, 13 refs.

DAS, A QC851.W6445

P1 and P2 modes were the most frequent types of departures from normal monthly mean sea level pressure in the southern hemisphere. This study considers that role they have played in the past in different circulation regimes by obtaining approximation to these indices from a combination of relatively few station pressure values. Stations, such as Campbell Island, with a long reliable record of sea level pressure were used.

I-19290
Iwashima, K., Fujita, M., Abiko, T., Yamagata, N., **Distribution of trace elements around Syowa Station. 1. Particulate arsenic content,** *Antarctic record,* Aug. 1977 No.59, p.2-9, In Japanese with English summary.

A new technique of determining nanogram amounts of arsenic in aerosols by the use of neutron activation was devised and applied to the ambient air collected in Japan, on board the *Fuji* on her JARE-16 voyage to Showa Station and at the Station during the winter 1975. Over-all chemical yield of the method was 50-70%. The urban ambient air in Japan usually contained 5-10 nanograms per cu m arsenic, while the clean air in a mountainous or seaside area around 1 nanograms per cu m or less. The air on the ocean contained 0.3 nanograms per cu m on the average, while the air at Syowa Station contained only 0.07 nanograms per cu m ranging from 0.03 to 0.14. The great differences were considered as the reflection of arsenic contamination due to human activities.

I-19291
Endo, Y., Karasawa, S., **Sulfur dioxide and fall dust during summer season at Syowa Station, Antarctica,** *Antarctic record,* Aug. 1977 No.59, p.10-17, 5 refs., In Japanese with English summary.

Sulfur dioxide and fall dust in the air were collected from Jan. 12 to Feb. 3, 1974, at Showa Station. The analysis showed that concentration of sulfur dioxide was from 1 to 30 micrograms/day/100 sq cm of lead oxide. The concentration of sulfur dioxide depended on wind direction and velocity, and high concentration was observed in the area between the station building and 300m southwest of the station, but other sampling points showed low concentration nearly equal to the background value. The concentration of fall dust was from 0.2 to 3.0 g/sq m/month, but it was independent of wind direction and wind velocity. (Auth.)

I-19337
Kuhn, M., Kundla, L.S., Stroschein, L.A., **Radiation budget at Plateau Station, Antarctica, 1966-1967,** *American Geophysical Union. Antarctic research series,* 1977 25(5), Meteorological studies at Plateau Station, Antarctica. Paper 5, p.41-73, Refs. p.71-73.

This paper reports on the four components of the radiation balance at Plateau Station as measured in the period Feb. 1966 through Dec. 1967. Problems of instrumentation and calibration are discussed as far as necessary for the judgment of reliability of the data. Auxiliary measurements of the anisotropy of diffuse sky radiation and of reflected radiation are described in detail. Particular emphasis is placed on the analysis of albedo and its response to size of snow grains, wind erosion of the surface, and solar elevation. Annual and mean daily variations of longwave fluxes are discussed in terms of radiative temperatures of snow and atmosphere. Differences of the longwave balances of the winter nights 1966 and 1967 are traced to different dynamical conditions of troposphere and inversion layer. An attempt is made to correlate net radiation to synoptic disturbances and, over longer periods, to atmospheric circulation. Whenever it is possible, comparison is made to radiation records of other antarctic stations. The homogeneity of East Antarctica's radiation climate is confirmed by the good agreement of radiation fluxes and derived parameters at Plateau, Vostok, and South Pole stations. (Auth.)

I-19338
Bischof, W., **Comparability of CO2 measurements,** *Tellus,* Oct. 1977 29(5), p.435-444, 14 refs.

In measuring the atmospheric CO2 concentration, corrections for the carrier gas effect are required at present for each individual gas analyzer. It is shown that standard gases of CO2/air composition offer less complication in the data comparison than CO2/N2 standards which are most commonly being used for calibration. CO2/air standards which are used in Stockholm and related to the Scripps manometric calibration scale have remained stable over more than 10 years. Aircraft data from the upper troposphere and the lower stratosphere obtained in the Stockholm project are in fair agreement with data from the Mauna Loa and the South Pole stations. An accelerating increase over the period 1963 to 1975, i.e. about 0.5 ppm/yr at the beginning and about 1.3 ppm/yr at the end of the period, has been observed. (Auth.)

I-19343
Kukla, G.J., **New data on climatic trends,** *Nature,* Dec. 15, 1977 270(5638), p.573-580, 52 refs.

Climatic data representing large segments of the Earth-atmosphere system in both the Northern and Southern Hemispheres are reported. The striking feature of the record is the large range of year-to-year temperature fluctuations. Indicators of large-scale climate developments show that the oscillatory cooling observed in the past 30 yr in the Northern Hemisphere has not yet been reversed. Data from the Southern Hemisphere show cooling until the mid 1960's, then slight warming. In high latitudes, south of 60S, the upper air gradually warmed throughout the recorded interval. The antarctic pack ice area expanded between 1967 and 1973 and decreased thereafter. Fluctuations in the Southern Hemisphere pack ice and in Northern Hemisphere snow and ice seem to be generally in phase for the period 1967-76.

I-19344
Wolfram, W., **Measurement of argon isotopes in air samples and comparison with computations from a model** [Messung von Argon-Isotopen in Luftproben und Vergleich mit Modellrechnungen], Bern, Universität, Institut für exakte Wissenschaften, 1973, 120p., In German. Ph.D. thesis. 42 refs.

Measurements of atmospheric Ar-39 made at Bern, Switzerland and elsewhere, were analyzed with the help of a multi-box model that accounts for different sources of origin and transfer. The study includes Ar-39 data obtained from air entrapped in ice at Byrd Station.

An analysis of these data indicates that the entrapment of argon occurs at a depth of 70 m. The derived precipitation rate is 9 cm water equivalent/year. Methods of measurement and analysis are described in detail.

I-19360

Nishio, F., Kawaguchi, S., **Meteorological data at Mizuho Camp, Antarctica in 1976-1977,** *Japanese Antarctic Research Expedition. JARE data reports,* Oct. 1977 No.40, 68p.

Surface meteorological observations of wind direction, wind speed, atmospheric pressure and air temperature were carried out at Mizuho Camp from Apr. 25, 1976 to Jan. 25, 1977. In addition, surface visibility, type and amount of clouds and weather phenomena were observed three times a day. Some notes on the instruments used are presented, and notations used in the tables are outlined.

I-19362

Renard, R.J., Salinas, M.G., **History, operation and performance of an experimental automatic weather station in Antarctica,** Monterey, California, Naval Postgraduate School, Oct. 1977, 57p., 9 refs.

The paper describes the prototype Automatic Weather Station platform (AWS), developed at Stanford University, and presents an evaluation of the data produced by its temperature, pressure and wind sensors while the platform was deployed at three locations on Antarctica (South Pole, McMurdo and Marble Point) during the years 1975-77. The major purpose of the Antarctica tests was to monitor the durability of the platform and its sensors and electronics, under harsh climate conditions. Instrument redundancy was employed for the measurement of pressure and wind. Data transmission from the sensors was effected by the Nimbus 6 Random Access Measurement System (RAMS). The evaluation is represented by a statistical analysis of the deviations of AWS readings from official observations at South Pole and McMurdo, as appropriate. These indicate that the pressure transducers functioned well throughout the period while temperature and wind sensors malfunctioned at various times. Deviations for most instruments exceeded those of the manufacturer's stated accuracies. The usable data period extended from 26 June 1975 to 20 July 1976. The platform transmitted data via RAMS from 26 June 1975 to 5 May 1977, although the data in the period after 20 July 1976 were considered meteorologically not useful. (Auth.)

I-19414

Davies, H.C., **Climatic change, orography and geostrophic motion,** *Archiv für meteorologie, geophysik und bioklimatologie,* 1975 23(1/2), Series B, p.1-12, 23 refs.

The paleoclimatological role of continental scale orographic effects is examined from a dynamical standpoint. Evidence for the so-called 'relief hypotheses' of climatic change is summarised, and juxtaposed with the geological evidence that suggests that major large-scale glaciations are only possible if large continents occupy a polar position for a sufficient period of time. Quasi-geostrophic dynamical models are then used to discuss the effects of a longitudinally symmetric polar land mass upon the general circulation of the atmosphere. In particular studies are made of the effect of this terrain upon baroclinic instability and the poleward propagation of quasi-geostrophic eddies. It is shown that the antarctic land mass can inhibit or curtail the poleward transfer of sensible heat by the baroclinically generated eddies unless there is a compensating increase in the overall meridional baroclinicity of the atmosphere. It is surmised that the isolated repercussive effect of the dynamical mechanisms considered is to induce a relative cooling of the polar regions. However it is stressed that the direct application of the results to the climatic change problem remains an academic exercise. (Auth.)

I-19444

Murakoshi, N., Morita, Y., **Meteorological phenomena in Antarctica** [Nankyoku ni okeru kisho no tokucho], *Antarctic record,* 1963 No.17, p.75-76, In Japanese.

Atmospheric temperature, wind velocity, and solar radiation are discussed for Maudheim and Showa Stations and are compared with data for the Arctic.

I-19459

Asgeirsson, V., Stanford, J.L., **Systematic deviations of Nimbus-5 atmospheric temperature fields from radiosonde data over the winter Antarctic,** *Geophysical research letters,* Oct. 1977 4(10), p.445-448, 4 refs.

Atmospheric temperature fields derived from inversions of Nimbus 5 radiance data are compared with radiosonde data from 15 antarctic stations during the period July 1 - Sep. 6, 1973. Unexpectedly large systematic differences are found in the upper troposphere and lower stratosphere over eastern Antarctica. The satellite-derived temperatures are typically 3-4 K too warm at 200 mb. Because many atmospheric model calculations depend critically on the accuracy of the temperature fields used as input data, and especially on horizontal temperature variations, these results are of importance and will be of interest to those researchers involved in temperature retrievals from satellite radiance data and to those who may wish to utilize Nimbus-5 temperature fields for model calculations in high southern latitudes. (Auth.)

I-19464

Azibane, C., Clavier, B., Dujardin, J.L., Le Touzé, V., Rigourd, J.F., **Study of the climate of the Kerguelen Islands and subantarctic region of the Indian Ocean. Climatology of Port-aux-Français** [Etude sur le climat des îles Kerguelen et de la zone subantarctique de l'Océan Indien. Climatologie de Port-aux-Français], *France. Météorologie nationale. Monographie,* July 1977 No.99, 138p., In French.

The first portion of this study sets forth in text, charts, and tables the following phases of the general and synoptic meteorology of the South Indian Ocean: sea and atmospheric discontinuities; general circulation; synoptic meteorology of the subantarctic zone. The second part is devoted to the climatology of Port-aux-Français. Parameters covered are: atmospheric pressure; wind; isolation; temperature; precipitation; and humidity.

I-19479

Farman, J.C., **Ozone measurements at British Antarctic Survey stations,** *Royal Society of London. Philosophical transactions,* 1977 Vol.279B, p.261-271, 19 refs.

Ozone measurements have been made regularly at Argentine Islands and Halley Bay since 1957. A recent critical review of the data revealed inconsistencies in the extraterrestrial constants adopted for the various spectrophotometers used. These have been resolved and the data recalculated to give consistent series. The variations in total ozone on differing time-scales, and their relation to variations in the temperature of the lower stratosphere, are discussed. A major increase in total ozone occurs in the course of the breakdown of the winter polar stratospheric vortex. It is often preceded by large quasi-periodic fluctuations associated with baroclinic waves in the vortex. The response of the vortex to these waves is discussed and comparisons made with conventional data from lower latitude stations and with satellite data on Southern Hemisphere sudden warmings. Long-term trends in total ozone are shown to be small at both stations. A recent global analysis of ozone trends is noted. (Auth.)

I-19484
Wilkniss, P.E., Lamontagne, R.A., Larson, R.E., Swinnerton, J.W., Dickson, C.R., Thompson, T., **Atmospheric trace gases in the southern hemisphere,** *Nature physical science,* Sep. 17, 1973 245(142), p.45-47, 14 refs.

In 1972 simultaneous measurements of five trace gases, carbon monoxide, carbon tetrachloride, freon-11, radon, and methane, were taken over the North and South Pacific and the Ross Sea. Results are presented in tables. Methane levels are slightly higher in the northern hemisphere, while carbon monoxide concentrations are higher there by about a factor of four. In view of the industrial contribution to CO production, this is not surprising. Similarly, freon is found predominantly in the northern hemisphere, since it has no natural source, entering the atmosphere from its use as an aerosol propellant. Naturally produced carbon tetrachloride has a nearly uniform global distribution. Radon concentrations are higher near the North American continent and extremely low both at the South Pole and at McMurdo.

I-19491
Kellogg, W.W., **Effects of human activities on global climate: a summary, with consideration of the implications of a possibly warmer Earth,** *World Meteorological Organization. Technical note,* 1977 No.156, 47p., Refs. p.37-47. In English with summaries in French, Russian and Spanish.

The current state of knowledge of how the Earth's climate system operates makes it difficult to predict the *natural* course of the climate in the next several decades. However, experiments have produced models which generally conclude that the results of human activity will materially affect global climate during the next few centuries. The largest single effect of human activities on the climate results from burning fossil fuels which increases the concentration of atmospheric carbon dioxide which in turn produces an increase in the temperature of the lower atmosphere. The estimated climate change due to human activities for the year AD 2000 is probably larger than any natural climate change that has been experienced in the past 1,000 years or more, and one would have to go back to the period 4,000 to 8,000 years ago to find a period approaching the degree of warming which is expected by the middle of the next century. A first survey of that past warm period indicates that there was generally more rainfall, especially in the areas of the present subtropical deserts, but that there were some regions at middle and high latitudes where it was drier than now. The warming would almost certainly have a major influence on the extent of Arctic and Antarctic sea ice, and eventually would cause a change in the total volume of the major ice sheets of Greenland and the Antarctic, but the corresponding change in sea level cannot yet be predicted with any confidence. (Auth. mod.)

I-19492
Molnár, G., **Method for determining temperature profiles from satellite radiation data** [Módszer a hömérsékleti profil meghatározására müholdas sugárzásadatokból], *Időjárás,* Sep.-Oct. 1977 81(5), p.293-300, In Hungarian with English and Russian summaries. 11 refs.

A simplified method is presented for the rapid determination of the temperature profile for 15 pressure levels from radiation data gained by meteorological satellites. A special simplified form of the statistical inversive procedure is applied, but the fact that the transmission depends on temperature is not ignored. The method in its original form is only applicable to radiation data measured over Hungary and Central Europe since the covariance matrices necessary to the statistical inversive procedure are prepared from the radiosonde measurements of Budapest. But-as it is shown-realistic results are obtained with the use of "neutral" covariance matrices containing identical elements even from the satellite data of Antarctica. (Auth.)

I-19526
Suzuki, T., Yasutomi, Y., Hayashi, N., Shinohara, T., **Meteorological observations at Showa in 1974 by the 15th Japanese Antarctic Research Expedition,** *Antarctic record.* Nov. 1977 No.60, p.70-92, 5 refs.

In accordance with the recommendation by WMO surface observations were carried out every three hours from Feb. 1 and aerological observations twice a day from March 1 in 1974. The new type hydrogen generator, which resolves ammonium into hydrogen and nitrogen, was set up and the mixed gas was stored in the tank, from which balloons could be filled anytime. In May the Indian Ocean High had great influence over the Antarctic Ocean, and the barograph recorded 1025.0 mb on the 27th. In June, Nov. and Dec. the fine weather lasted for a long time. In November the ratio of possible sunshine attained 75% and the number of clear days was 16. The results of ozone sonde (KC-68) observations showed that in the stratospheric sudden warming phenomena the temperature rise is closely related with the ozone-density increase. Observations of the total amount of ozone were carried out with the ozone spectrophotometer. The turbidity of the atmosphere was also calculated by means of the pyrheliometer and filter technique. (Auth.)

I-19556
Limbert, D.W.S., Farman, J.C., **Annual summary tables of surface meteorological observations at British Antarctic Survey stations,** *British Antarctic Survey. Bulletin,* Dec. 1976 No.44, p.27-29, 6 refs.

This note introduces a new series of meteorological tables to be published in the BAS Bulletin. The tables will be accompanied by weather notes outlining the salient features of the year and making comparisons with earlier years. Station notes will also be given. Details for past and present BAS stations and Orcadas are given.

I-19557
Limbert, D.W.S., Loan, R.S.B., **Climatological summary for 1971,** *British Antarctic Survey. Bulletin,* Dec. 1976 No.44, p.31-37.

Climatological summary charts for South Georgia, Signy Island, the Argentine Islands, Halley Bay and Adelaide Island are given. M.S.L. pressure, air temperature, wind speed, humidity, total cloud, sunshine, precipitation, and weather summaries are covered.

I-19558
Limbert, D.W.S., Loan, R.S.B., **Climatological summary for 1972,** *British Antarctic Survey. Bulletin,* Dec. 1976 No.44, p.39-45.

Climatological summary charts for South Georgia, Signy Island, the Argentine Islands, Halley Bay and Adelaide Island are given. M.S.L. pressure, air temperature, wind speed, humidity, total cloud, sunshine, precipitation, and weather observations are included.

I-19567
Suziumova, G.N., **Basic features of Antarctic climate and weather** [Osnovnye cherty klimata Antarktidy v pogodakh], *Akademiia nauk SSSR. Institut geografii. Materialy meteorologicheskikh issledovanii,* 1977, Issledovaniia struktur klimata v pogodakh. Chast' 2. Tsirkuliatsiia atmosfery i klimat (Studies of climatic patterns and weather. Part 2. Atmospheric circulation and climate), p.79-80, In Russian.

DLC QC989.R49I87

A brief description of general characteristics of antarctic weather is given, especially in terms of the differences between coastal and intracontinental patterns of cloud cover and precipitation.

I-19587

Tolstikov, E.I., **Meteorological research in the Arctic and Antarctic during the Soviet regime** [Meteorologicheskie issledovaniia v Arktike i Antarktike za gody Sovetskoĭ vlasti], *Meteorologiia i gidrologiia*, Nov. 1977 No.11, p.86-90, In Russian.

This is an historical review of the meteorological research programs carried out by the Soviet Union since the Revolution. Included in the overview are international programs, such as POLEX, in which they have participated. Fundamental results are summarized, especially for recently completed work, and a brief outline of plans for the future is presented.

I-19694

Schwerdtfeger, W., **Temperature regime of the South Pole: results of 20 years' observations at Amundsen-Scott Station,** *Antarctic journal of the United States*, Oct. 1977 12(4), p.156-159, 8 refs.

Temperature observations at Amundsen-Scott Station from Jan. 1957 to Dec. 1976 reveal two remarkable features. First, the south polar summer is very short, not more than about 30 days between mid-Dec. and mid.-Jan. Second, the south polar winter is "coreless." In the last days of Mar. it is nearly as cold as in the six following months. In the 20-yr average, July is the coldest month. A plot of the South Pole temperature regime suggests that it is essentially determined by the radiative energy budget, the short wave budget in the summer and the long wave in the winter half-year. The results of a harmonic analysis of the unsmoothed series of 20-yr averages for the individual 365 calendar days are tabulated, and pronounced changes in the temperature record are discussed.

I-19695

Peterson, J.T., Szwarc, V.S., **Geophysical monitoring for climatic change at the South Pole,** *Antarctic journal of the United States*, Oct. 1977 12(4), p.159-160, 3 refs.

The measurement program conducted at Amundsen-Scott Station included the following parameters: carbon dioxide, total ozone, surface ozone, solar radiation, atmospheric aerosol optical thickness, atmospheric aerosols, meteorology, and halocarbons. The continuous data are routinely recorded on-site on magnetic tape controlled by a NOVA 1220 computer. The new clean air facility is pictured.

I-19696

Rasmussen, R.A., Robinson, E., **Analysis of halocarbons in Antarctica,** *Antarctic journal of the United States*, Oct. 1977 12(4), p.160-161.

Measurements of F-11, F-12, CCl4, and CH3CCl3 in the antarctic atmosphere are summarized. Results from 1975, 1976 and 1977 field work show a definite trend for an increase in the absolute concentrations observed, but also a trend for a decreasing interhemispheric difference. These observations are consistent with the decrease in production and release of the fluorocarbons in the last several years. The increase in CCl4 and in its interhemispheric difference is questionable. The increase in the methylchloroform level is consistent with its increased production and usage. The lack of any difference in the N2O levels between the Northern and Southern Hemisphere was verified for the first time. Measurements of the latitudinal concentration distributions of the halocarbons from Christchurch, New Zealand to the South Pole are discussed.

I-19697

Warburton, J.A., Linkletter, G.O., **Atmosphere's role in chemical composition of Ross Ice Shelf snow,** *Antarctic journal of the United States*, Oct. 1977 12(4), p.161-162, 2 refs.

These studies, conducted from Ross Ice Shelf Project (RISP) camps J-9 and F-9, focused on the collection of samples of falling snow during storms and rime and hoar during periods of fog. Approximately 150 precipitation samples and 200 hr of snow crystal replica data were collected during 20 snow storms and 20 fogs. Snow samples were collected from 1-5 m deep pits at the two camps and at other RISP sites for analyses of major and trace elements, beta activity and stable isotopes. Stratigraphic analyses and measurements of snow density and hardness were made in each pit. Hourly meteorological observations were made and aerosol concentration and composition were studied.

I-19698

Cobb, W.E., **Atmospheric electric measurements at the South Pole: the krypton-85 question,** *Antarctic journal of the United States*, Oct. 1977 12(4), p.162.

Special attention at the new clean air facility is being given to electrical conductivity observations and the establishment of reliable baseline values. The emphasis on conductivity has been spurred by the recent interest in radioactive krypton-85, a gaseous byproduct of nuclear explosions and nuclear power plants. Krypton-85 is not considered biologically hazardous; however, over the next 50 yr it will significantly increase the conductivity within the global atmosphere and possibly alter the electrical characteristics and rain formation processes.

I-19699

Hofmann, D.J., **Measurements of trace gases and aerosols in the antarctic stratosphere,** *Antarctic journal of the United States*, Oct. 1977 12(4), p.162-164, 8 refs.

The use of balloon soundings for measurements of stratospheric N2O, CF2Cl2, CFCl3, and aerosols having radii larger than 0.15 micron at McMurdo and for measurements of ozone and condensation nuclei at the South Pole is discussed. The 1976 trace gas samples have good results for N2O but failed to produce results for the chlorofluoromethanes CF2Cl2 and CFCl3. Data from two 1977 soundings about 20 hr apart are in good agreement, verifying the observation of a nearly constant mixing ratio between 25 and 30 km. The aerosol profile shows an unusual layered structure in the lower stratosphere that may have been related to minor volcanic activity in New Zealand. The condensation nuclei profile obtained at the South Pole shows unexpected highly concentrated layers in the troposphere.

I-19700

Carroll, J.J., Coulson, K.L., Hamilton, R.H., Jackson, B., **Atmospheric processes and energy transfers at the South Pole,** *Antarctic journal of the United States*, Oct. 1977 12(4), p.164-165, 3 refs.

The 1976-77 program at Amundsen-Scott Station included relocation and continuation of energy balance measurements east of the new clean air facility, analysis of 1975 energy balance measurements, and measurement of the intensity and polarization of visible radiation reflected by the snow surface. The results are summarized. The seasonally averaged energy balance data illustrates the major role of downward heat transport by the air in balancing the radiative losses, and shows that the variability of the various components increases considerably with decreasing averaging period. A computer controlled polarizing radiometer was used for surface reflection measurements.

I-19701

Smiley, V.N., Morley, B.M., Warburton, J.A., **Lidar and replication studies of ice crystal precipitation at the South Pole,** *Antarctic journal of the United States*, Oct. 1977 12(4), p.166-167.

The operation of and results obtained with a lidar (optical radar) and an ice crystal replicator set up at South Pole station for the austral

summer of 1976-77 are described. The lidar sends an intense pulse of light from a dye laser vertically into the atmosphere and detects light that is backscattered from aerosols in the troposphere as a function of altitude. The ice crystal replicator makes replicas in formvar of ice crystals that reach the surface. The lidar was linked to a computer so that the data were recorded on magnetic tape. Typical lidar return signals obtained when ice crystals are present and from a water drop cloud are plotted.

I-19702

Neff, W.D., Ramm, H.E., Hall, F.F., Jr., **Acoustic sounder operations at South Pole Station,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.167-168, 2 refs.

An acoustic sounder was in operation at South Pole Station throughout 1975. In the backscatter mode, sound waves are scattered by small-scale thermal fluctuations, thus defining the location of turbulent inversion layers. At other scattering angles turbulent velocity fluctuations also contribute, giving a measure of the intensity of the small-scale turbulence and its spatial distribution. The mean motion of the air volume advecting the small-scale eddies also induces a Doppler shift that can be detected using either analog or digital computer techniques. During Jan. and Feb. 1977, a sounding system, utilizing bistatic geometry and Doppler principles, was set up at Amundsen-Scott South Pole station to study the turbulence structure and evolution of the statically stable boundary layer over the ice plateau. The results are summarized. A complete Doppler wind system capable of monitoring the relation between the wind at the top of the surface inversion and the surface wind and turbulent fluxes is planned for 1978.

I-19704

Hogan, A.W., **Meteorological research aboard instrumented LC-130R airplane and at the South Pole,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.170-171.

Four meteorological research flights were made along a course from open water over the Ross Sea north of McMurdo to the South Pole, then to Q-13 on the Ross Ice Shelf, and returning to McMurdo. Preliminary results from the flights indicate that an aerosol enriched layer is present just above the katabatic return flow layer over the polar plateau, and the lower stratosphere is somewhat more moist than anticipated and contains slightly higher particle concentrations than the immediately adjacent upper troposphere. The performance and reliability of the instrument package were good. Meteorological instrumentation was installed at the new clean air facility at the South Pole, observations were made of near surface meteorology, blowing snow and precipitation, and precipitating and blowing ice crystals were collected for analysis.

I-19705

Parish, T., Schwerdtfeger, W., **Cold, low-level jet stream in the Bransfield Strait: an example of inertial flow,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.171-172, 3 refs.

The flow pattern of a low-level jet stream of cold Weddell Sea air in inertial motion after passing through the Antarctic Sound into the Bransfield Strait is described and illustrated. The flow pattern is shown with and without friction, corresponding to an original wind speed of 20 m/sec. It is advised that attention be given to the wind and temperature observations of the two Argentine stations Marambio and Matienzo in order to be forewarned of the development of such a jet.

I-19707

Warburton, J.A., **Air-sea interaction studies using an X-band radar at Palmer Station,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.174-175.

A new 3-cm-wavelength radar system installed at Palmer Station to provide information on storm structure and motion at long range is described. In addition to observations of storms, the system will be used to investigate snow precipitation, sea ice accumulation and motion at relatively short distances, air-sea interactions, katabatic flow, and possibly, antarctic seabirds which must travel to open water to obtain their food. Special features include a storage oscilloscope for the radar display and data processing equipment. In addition, a new satellite communications link has been established between Palmer Station and the laboratories in Reno.

I-19708

Franceschini, G.A., **Solar radiation measurements in the Weddell Sea, 1977,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.175, 4 refs.

Solar radiation measurements were carried out aboard *Burton Island* in coordination with onboard biological and sea-ice programs. The sensing system is described. The data are being reduced in terms of total irradiance, photosynthetically active radiation, and photo count. The dependency of these quantities on latitude, cloudiness, and surface ice conditions will be investigated and correlated with other studies to give a picture of the solar radiation environment over the southern ocean.

I-19709

Franceschini, G.A., **Seasonal variation of incident solar radiation over the South Atlantic Ocean,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.175-177, 3 refs.

Solar radiation measurements made in the South Atlantic Ocean during four cruises of *Islas Orcadas* (3, 4, 5 and 7) are discussed. Seasonal variations associated with astronomical constraints were observed in the daily average irradiances. In general, the daily fluxes decreased southward and the minimum latitudinal gradient was found during the fall. The magnitude of photosynthetically active radiation (PAR) decreased southward, in general. However, when PAR values are expressed as a percent of the total irradiance, the percentage values generally increased southward. A larger percent-PAR was observed under cloudy skies than under clear to partly cloudy conditions. PAR invariably shows a diurnal asymmetry with respect to local apparent noon.

I-19735

Englebretson, R.E., **Operational meteorology, *Deep Freeze* '77,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.214.

The *Deep Freeze* '77 operational meteorology program included the following activities: observing meteorological parameters in the McMurdo area, weather reporting and weather forecasting, issuing meteorology field kits to project personnel, installing and upgrading sensing systems and recording equipment at several stations, making ice reconnaissance flights in the western Ross Sea and at Hallett Station, and ice observing aboard ship.

I-19744

Witalis, R.E., **Summary of reference gas and air analysis with Applied Physics Corporation Infrared Gas Analyser No. 47 at South Pole, Antarctica, during 1961,** Antarctic Carbon Dioxide Project Report No.3, January 25, 1962, 42p., Unpublished manuscript available from Charles D. Keeling, Scripps Institution of Oceanography, La Jolla, California.

This report presents a summary of measurements of the concentration of carbon dioxide in specially prepared mixtures of nitrogen gas and in continuously sampled atmospheric air at the Amundsen-Scott Station at the geographic South Pole.

I-19786
Girs, A.A., Efimov, V.A., **Global atmospheric circulation as an oscillatory process and study of its characteristics using POLEX data,** *Problems of the Arctic and the Antarctic, collection of articles,* 1977 Vol.47, p.49-62, TT-76-52038, For Russian original, see I-17385. 8 refs.

The role of the polar areas in global atmospheric and oceanographic studies is examined. A number of questions concerned with the formulation of a theory of general circulation patterns by using a hydrodynamic model capable of describing a mechanism for energy transfer along the spectrum of wave disturbances are identified. Several observations are offered to permit better understanding of the role of baroclinic and nonadiabatic factors in the complex mechanism of nonlinear energy wave interaction.

I-19787
Sarukhanian, E.I., Smirnov, N.P., **On the role of cosmogeophysical forces in polar hydrometeorological processes,** *Problems of the Arctic and the Antarctic, collection of articles,* 1977 Vol.47, p.63-78, TT-76-52038, For Russian original, see I-17386. 37 refs.

The role of geophysical factors in variations of the atmospheric and ocean circulation is discussed, particularly as it affects POLEX program plans. Examples are given of the occurrence of tidal forces and forces of a tidal nature (both nutational and rotational) in the atmosphere and ocean. The authors suggest that the dual nature of atmospheric phenomena is a result of these forces. The correlation of spatial structure of the earth's pressure field with gravity anomaly fields and the effect of solar activity on atmospheric processes is highlighted.

I-19790
Efimov, V.A., **Full-scale and model studies of nonlinear factors in baroclinic motion: a problem for the POLEX-South program,** *Problems of the Arctic and the Antarctic, collection of articles,* 1977 Vol.47, p.166-177, TT-76-52038, For Russian original, see I-17389. 7 refs.

Methodology for field and model studies in connection with the POLEX-South program is suggested. A spectral model describing in detail factors on nonlinear, aperiodic restructuring of atmospheric processes is given, based on theoretical experiments. The effect of nonadiabatic factors in the model is made more precise by field data gathered in Antarctica, which facilitate the study of the physics of baroclinic and nonlinear effects of atmospheric dynamics.

I-19794
Hajek, E.R., Cisternas, R., **Wind chill index as applied to three Chilean antarctic bases** [Aplicación del "Wind Chill Index" al estudio bioclimático de tres bases antárticas chilenas], *Santiago de Chile. Instituto Antártico Chileno. Serie científica,* 1972 2(2), p.27-42, In Spanish with English summary. 7 refs.

Three Chilean antarctic bases of Arturo Prat, Bernardo O'Higgins and Pedro Aguirre Cerda were analyzed comparatively to determine the climatic severity by means of the Wind Chill Index, used here as a relative measure of climatic impact on man in the sub-antarctic regions. Data of 1966, 1967 and 1968 were used. The main conclusions refer to seasonal distribution of WCHI, not showing the Index to have any special pattern according to the hours of day. The annual variation of the WCHI is conditioned by temperature. Prevailing wind direction at the three bases is easterly in summer, climatic severity is loosely associated with east winds and is independent of other wind directions. Values associated with east winds are between 1300 and 1400. It is possible to establish a latitudinal gradient of the WCHI and therefore of the climate. The Chilean bases, not showing striking differences between them, are located at the more favorable extreme of this sequence. (Auth. mod.)

I-19816
Stanford, J.L., **On the nature of persistent stratospheric clouds in the Antarctic,** *Tellus,* Dec. 1977 29(6), p.530-534, 9 refs.

Thin, persistent very high clouds called "Stratospheric Cist" were reported at Maudheim base during the 1950-51 austral winters. The nature of these clouds, whether they are H2O or dust, is of importance in the proposed sink for stratospheric moisture in the antarctic winter. Results are presented from analyses of unpublished daily cloud reports and daily upper air measurements from the Maudheim expedition. The results reveal strong evidence that the "Stratospheric Cist" were stratospheric ice clouds. Given the identification, an upper limit of 6-7 ppm can be assigned to the water vapor mixing ratio in the lower stratosphere for the 1950-51 antarctic winters. (Auth.)

I-19826
Kobayashi, S., **Vertical structure of katabatic winds in Mizuho Plateau,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Jan. 1978 No.7, p.72-80, 23 refs.

Observation of vertical structure of katabatic winds blowing in Mizuho Plateau was made by means of radiosondes. It was found that the layer of the katabatic winds is roughly identical with the surface inversion layer. The surface inversion layer showed seasonal variations in thickness and intensity. The katabatic wind layer disappeared when a cyclone was passing over the ocean in the vicinity of Showa Station, as noticed from the disarranged wind speed profiles. Wind vectors in the lowest few hundred meters of the katabatic wind layer showed that a thermal wind persisted in the surface inversion layer. Therefore, the katabatic winds in Mizuho Plateau may be called the "inversion winds", because they are essentially controlled by the thermal wind due to the existence of a sloped inversion layer. (Auth.)

I-19828
Ageta, Y., Kobayashi, S., **Observations of sea-salt particles in the air in Mizuho Plateau,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Jan. 1978 No.7, p.93-99, 13 refs.

This paper presents the observational results on the concentrations of sea-salt particles in the air over Mizuho Plateau. The sea-salt particles are transported to the area more than 200 km inland from the coast by cyclonic disturbances, but they are not found even in the coastal area when meteorological conditions are not effective for transporting them. Seasonal variation of the concentration of sea-salt particles is controlled by the activities of cyclones. (Auth.)

I-19829
Inoue, M., Yamada, T., Kobayashi, S., **Effects of synoptic scale disturbance on seasonal variations of katabatic winds and moisture transport into Mizuho Plateau,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Jan. 1978·No.7, p.100-114, 26 refs.

Studies have been made of seasonal variations of meteorological elements at Showa Station and Mizuho Camp. From the spectrum analysis of time series data of air pressure, wind speed and air temperature at Showa Station and Mizuho Camp, the following are found: katabatic wind speeds and air temperature at Mizuho Camp have each a good correlation with air pressure at Showa Station in a cycle of about four days; a seasonal variation of each katabatic wind and air temperature at the camp coincides with that of air pressure at the station resulting from the synoptic scale disturbance. The studies also disclosed: a seasonal variation of air pressure at the station caused

by a synoptic scale disturbance corresponds to a seasonal variation of moisture flux from the sea into Mizuho Plateau; the monthly means of both wind speed over the surface inversion layer and horizontal moisture flux from the sea to the continent became maximum in Sep. 1972, when the synoptic scale disturbances became strong; the seasonal variation of horizontal moisture flux at the level corresponding to 700 mb above Showa Station shows a fairly good correlation with that of net accumulation of snow at Mizuho Camp. (Auth.)

I-19842

Tsigel'nitskiĭ, I.I., **Two-dimensional temperature, relative humidity and wind speed distribution (according to data from Soviet antarctic stations)** [Dvumernye raspredeleniia temperatury, otnositel'noĭ vlazhnosti vozdukha i skorosti vetra (po dannym sovetskikh antarkticheskikh stantsiĭ)], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1977 Vol.362, p.120-130, In Russian. 5 refs.

Temperature/humidity and temperature/wind speed correspondences are studied from data recorded at Mirnyy, Molodezhnaya, Novolazarevskaya and Vostok Stations, 1965-1972 at 00 hrs. g.m.t. Correlation and asymmetry coefficients are computed.

I-19844

Ergin, M., Harkness, D.D., Walton, A., **Glasgow University radiocarbon measurements II,** *Radiocarbon,* 1970 12(2), p.486-495, 5 refs.

Atmospheric CO2 from Stanley, Falkland Islands, from the Argentine Islands, and from Halley Bay in winter and summer was tested by the Glasgow University laboratory. Measurements were made as part of two continuing research programs: C14 concentrations in humans in relation to their immediate environment and C14 transport within the dynamic carbon reservoir.

I-19845

Delibrias, G., Guillier, M.T., Labeyrie, J., **Gif natural radiocarbon measurements VI,** *Radiocarbon,* 1972 13(2), p.213-254, Refs. p.252-254.

A peatbog sample from Christmas Harbor, Kerguelen Island, and atmospheric samples from Adélie Coast and the Kerguelens are examined by means of radiocarbon dating procedures. Curves of artificial C14 values vs time are not as smooth as might be expected if transfer from north to the southern hemisphere is the sole process. There is no significant difference between artificial C14 values for the Adélie Coast and Kerguelen.

I-19883

Savitskiĭ, G.B., Lessing, V.M., **Features of development of atmospheric processes in the southern hemisphere in 1974** [Nekotorye osobennosti razvitiia atmosfernykh protsessov iuzhnogo polushariia v 1974 g.], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten',* 1977 No.96, p.13-24, In Russian.

The authors present a short description of synoptic processes over Antarctica in 1974. Charts showing surface and 500 mb pressure fields for January and June are given. On these are also shown cyclone and anticyclone trajectories and tropospheric circulation based on satellite data. Periodicity of meridional and zonal circulation forms and tropospheric currents over Molodezhnaya Station is set forth in tables.

I-19901

Taljaard, J.J., Potgieter, T.I., **Surface temperature and sea-level pressure at Norway Station and Sanae,** *South African journal of antarctic research,* 1976 Vol.6, p.26-28, 2 refs.

Monthly and annual mean surface temperatures and sea-level pressures for Sanae for the period Jan. 1969 to Dec. 1975 are presented. The main features of the results, considered in conjunction with those obtained at Norway Station and Sanae from 1960 to 1968, are discussed.' (Auth.)

I-19941

Lynch, D.K., **Atmospheric halos,** *Scientific American,* Apr. 1978 238(4), p.144-152.

Various forms of halos around the sun and moon and related apparitions in the sky are described, color illustrated, and their mechanisms discussed. The phenomenon is caused by the reflection and refraction of light by crystals of ice. Among the types described are the 22-degree halo, the parhelia, the circumscribed halo, the circumzenith arc, Parry arcs, the parhelic circle, and the solar pillar. A variety of optical effects are reproduced in two color photos taken near the South Pole.

I-19943

Japanese Antarctic Research Expedition, **Antarctic meteorological data. Vol.16. Meteorological data at the Syowa Station in 1975,** Tokyo, Japan Meteorological Agency, 1975, 253p.

Tabulations of surface and aerological observations carried out by the Japanese Antarctic Expedition at Showa Station in 1975 are presented. The data are listed variously as hourly, daily, monthly, and synoptic summaries.

I-19944

Japanese Antarctic Research Expedition, **Antarctic meteorological data. Vol.17. Meteorological data at the Syowa Station in 1976,** Tokyo, Japan Meteorological Agency, 1976, 237p.

Tabulations of surface, aerological, and global solar radiation observations carried out by the Japanese Antarctic Expedition at Showa Station in 1976 are presented. The data are listed variously as hourly, daily, monthly, and synoptic summaries.

I-19945

Japanese Antarctic Research Expedition, **Antarctic meteorological data. Special volume,** Tokyo, Japan Meteorological Agency, 1978, 115p., 5 refs.

This volume contains upper air data of three kinds of meteorological elements, i.e., ozone, atmospheric electricity and long wave radiation fluxes, which were observed by specially designed radiosondes at Showa Station. Results of observations carried out from 1966 to 1975 are presented, except the atmospheric electricity data for 1967 to 1972. The types of radiosondes used for the observations are listed.

I-19990

Oerlemans, J., Dool, H.M. van den, **Energy balance climate models: stability experiments with a refined albedo and updated coefficients for infrared emission,** *Journal of the atmospheric sciences,* Mar. 1978 35(3), p.371-381, 25 refs.

A zonally averaged climate model of the energy-balance type is examined. Recently published satellite measurements were used to improve existing parameterizations of planetary albedo and outgoing radiation in terms of surface and sea level temperature. Observations on antarctic sea level temperature were considered. A realistic constant for the diffusion of energy was found by tuning the model to the present climate. For the actual solar constant both the present climate and an ice-covered earth are solutions of the model. They are extremely stable for temperature perturbations. The effect of variation of the solar constant was investigated in detail. (Auth. mod.)

I-20069

Ekdahl, C.A., Keeling, C.D., **Atmospheric carbon dioxide and radiocarbon in the natural carbon cycle. I. Quantitative deductions from records at Mauna Loa Observatory and at the South Pole,** *Brookhaven Symposium on Biology,* Aug. 1973 No.30, p.51-85, 28 refs.

The concentration of atmospheric CO2 in the Northern Hemisphere increased by 6.8 ppM from 1959 to 1969, according to a long series of measurements at the Mauna Loa Observatory, Hawaii. In the same period the Southern Hemisphere concentration increased by 6.7 ppM, according to an even longer series of measurements of South Polar air. These increases, when averaged, correspond to 2.34% of the presumed preindustrial CO2 concentration of 290 ppM and imply that approximately 49% of the contemporary production of CO2 from combustion of fossil fuel and kilning of limestone remained airborne. The approximately 51% not remaining airborne was evidently incorporated into the oceans and land biota. To learn more about this uptake, the authors take into account atmospheric radiocarbon variations as recorded in tree rings, and to interpret this record they examine a series of geochemical models of the reservoirs into which CO2 and radiocarbon can mix. (Auth. mod.)

I-20074

Lauscher, F., **Methods for a global climatology of hydrometeors: the percentage of solid precipitation** [Methoden zur Weltklimatologie der Hydrometeore. Der Anteil des festen Niederschlags am Gesamtniederschlag], *Archiv für Meteorologie, Geophysik und Bioklimatologie. Ser.B.* 1976 24(3), p.129-176, In German with English summary. 60 refs.

A simple way to get a first approximation of solid precipitation ratio is the guideline F%=50-5t, where F% is the percentage of solid precipitation, especially snowfall, and t the monthly mean temperature in degrees Celsius. Exact forms of the guideline functions were analyzed using long series of daily observations at 130 meteorological stations (Canada, Atlantic coasts, Asia, Arctic, Antarctica). The functions are used to calculate sums of solid precipitation for more places all over the globe.

I-20076

Streten, N.A., **Seasonal climatic variability over the southern oceans,** *Archiv für Meteorologie, Geophysik und Bioklimatologie. Ser.B,* 1977 25(1), p.1-19, 18 refs.

In order to establish the distribution of element variability and and its possible relation to broad scale circulation patterns, a comparative survey is made of monthly and seasonal climatic data for the middle and higher latitude southern hemisphere islands. Variability of mean temperature between the same seasons of different years is low except for the winter pack ice fringe of the Weddell Sea; in general, precipitation decreases with island latitude, shows some longitude dependence at lower latitudes but exhibits relatively low interseasonal and interannual variability. No significant trend in island temperature and precipitation or in broad zonal pressure or temperature gradient is discernible over the period of record, though a decreased meridional temperature gradient over the Weddell Sea in spring is observed during the latter part of the 1960's. (Auth.)

I-20082

Nishio, F., **Atmospheric water vapor measurements at Mizuho Camp, East Antarctica in 1976-1977,** *Antarctic record,* Mar. 1978 No.61, p.1-10, 5 refs.

Measurement of atmospheric humidity 1.5 m above the snow surface was made at Mizuho Camp, East Antarctica, several times a day during the summer 1976-1977. Vapor pressure was estimated from the humidity at temperatures between -6.5 and -22.8C. The vapor pressure obtained showed daily variations similar to air temperature. No supersaturation of water vapor with respect to ice was detected and no ice fog was observed. Relative humidity was between 30 and 80%. It was lower when katabatic winds prevailed than under the influence of cyclones. The daily mean amount of sublimation estimated from vapor pressure was between 1.3 and 1.9 mm/day, and it was nearly two or three times larger than the amount of sublimation obtained by direct snow stake measurement. (Auth.)

I-20105

Kellogg, W.W., **Is mankind warming the Earth,** *Bulletin of the atomic scientists,* Feb. 1978 34(2), p.11-19, 21 refs.
For another version of this paper see 32-1645 or I-19491.

It is suggested that most of mankind's activities lead to a warming of the Earth. The addition of carbon dioxide to the atmosphere from the extensive burning of fossil fuels is the largest single factor, since the gas absorbs infrared radiation from the surface that would otherwise escape to space. Estimates, based on a variety of theoretical models of climate, lead to the conclusion that by the end of this century the Earth's average surface temperature will be warmer than at any time in the past thousand years or more and still rising. The polar regions will experience dramatic shifts of snow and ice cover and regions of permafrost, and the behavior of the Arctic Ocean ice pack seems to be an especially important consideration. Although it cannot be predicted what influence these changes will have on the ice sheets of Greenland and the Antarctic, even a small change in their volumes could significantly affect sea level.

I-20135

Gaĭgerov, S.S., Fedorov, V.V., Kalikhman, M.IA., Zaĭchikov, B.P., **Temperature and wind velocity variations in the winter polar mesosphere,** Space research XIV, Berlin, Akademie-Verlag, 1974, p.59-62, 4 refs.

DSI, QC801.S73 NASM

Meteorological rocket data obtained in the polar regions reveal large temperature and wind variability in the winter mesosphere. The maximal range of temperature fluctuations amounts to about 40-80C in 7 to 10 days in the mesosphere. Temperature fluctuations gradually diminish in the stratosphere towards a minimum in the lower stratosphere. Warmings (and coolings) in the upper atmosphere precede those in the lower layers. Warm and cold regions can be seen overlying each other. Rocket observations at the Molodezhnaya Station show that the intensification of the westerly flow in the upper and middle mesosphere is usually accompanied by a warming, while during the decrease of westerly winds, as well as the growth of meridional wind components and development of easterly flow, cooling of the upper atmosphere has been recorded. (Auth.)

I-20140

Jenne, R.L., Crutcher, H.L., Loon, H. van, Taljaard, J.J., **Climate of the upper air: Southern Hemisphere. Vol.3. Vector mean geostrophic winds: isogon and isotach analyses,** *National Center for Atmospheric Research. Technical note,* May 1971 NCAR TN/STR-58, 63p., 12 refs.

DAS A QC982.5.B67 v.3

This volume presents the distribution of isogons and isotachs of the geostrophic winds computed from the isobaric heights presented in Vol.1 of this atlas (Taljaard et al, 1969). Charts present information for seven selected levels for each of the four midseason months. Vol.1 describes the data processing and analysis methods, and Vol.2 (van Loon et al, 1971), the computation of the geostrophic winds.

I-20150

Ludlum, D.M., **Around the world, pole to pole, in 48 hours,** *Weatherwise,* Dec. 1977 30(6), p.242-247, 263.

A weatherman gives an account of a Pan American flight on Oct. 28-30, 1977, from San Francisco over the North and South Poles and return, on the occasion of the 50th anniversary of Pan Am's first commercial flight. The author, in the process of writing a book discussing the weather attending the major events in American history, decided to include accounts of what weather conditions were reported to have been at the North and South Poles when the explorers of polar regions in the early part of this century claimed to have attained their goals. Observations are made on the antarctic terrain, ice masses, and sea ice conditions, as well as sky conditions. The flight covered 26,642 miles in 48 hours.

I-20169

Kuperov, L.P., **Effectiveness of collecting meteorological data in Antarctica by means of simultaneous or consecutive querying of stations by shortwave** [Nadezhnost' sbora meteorologicheskoĭ informatsii v Antarktike sredstvami korotkovolnovoĭ radiosviazi pri parallel'nom i posledovatel'nom oprose stantsiĭ], *Leningrad. Articheskŭ i antarkticheskŭ nauchno-issledovatel'skŭ institut. Trudy,* 1977 Vol.340, p.74-81, In Russian.

The existing system of radio communication among Soviet Antarctic stations is reviewed with regard to transmission of meteorological information. Simultaneous querying of all stations is feasible (at 0.2 mkV/m) at least 26 days/month, while consecutive contact may be practicable as infrequently as 15-23 days/month.

I-20184

Kemp, E.M., **Tertiary climatic evolution and vegetation history in the southeast Indian Ocean region,** *Palaeogeography, palaeoclimatology, palaeoecology,* June 1978 24(3), p.169-208, Refs. p.203-208.

In this review, data relating to sea-surface temperatures, to land and sea positions, and to the extent of the Antarctic ice cap, are used to derive climatic models for the Palaeocene to latest Miocene interval. The models are correlated with vegetation history deciphered from palynological data.

I-20186

Trenberth, K.E., **Surface atmospheric tides in New Zealand,** *New Zealand journal of science,* Sep. 1977 20(3), p.339-356, 10 refs.

Atmospheric tides in the ground level pressure field have been analyzed into the first 4 solar components for the New Zealand area. The patterns of the semidiurnal, terdiurnal, and quaterdiurnal tides are consistent with those found elsewhere as being dominated by a planetary-scale wave. In contrast, there is much greater amplitude locally in the diurnal solar tide, S1(p), than had been previously suspected; and there are large variations in phase across the country. The amplitude and phase of S1(p) are closely related to day-to-day weather and, in particular, to the orientation, stability, and strength of the large-scale wind flow across the country. The cause of S1(p) is mainly an interaction between the strong orographic distortion of the large-scale wind flow by the mountainous terrain of New Zealand, which undergoes diurnal changes associated with changes in atmospheric stability and surface wind, and the sea-breeze type thermal forcing associated with diurnal heating. These produce an enhanced mesoscale sea-breeze that may occur at any time of the year, although with greatest amplitude in summer. An example is the prevailing Canterbury north-easterly wind. The data from New Zealand stations used in this analysis include pressure data from Campbell Island. (Auth. mod.)

I-20202

Fletcher, J.O., Kelley, J.J., **Role of the polar regions in global climate change,** Polar research: to the present, and the future, edited by M.A. McWhinnie, Boulder, Colo., Westview Press, 1978, p.97-116, 19 refs.

The interactions of air, sea, land, and ice in the Arctic and Antarctic, and the importance of these regions in global climate change are discussed. A comparison of the annual patterns of atmospheric heat loss over the antarctic continent, over the pack ice, and over the ice-free regions of the surrounding ocean reveals differences which have corresponding effects on the thermal forcing of atmospheric circulation. Investigations of the variations in ice extent on the Southern Ocean suggest a hypothesis in which changes in solar radiation in Antarctica are amplified by variations in the extent of sea ice, causing variations in the Southern Hemisphere circulation. More extensive sea ice tends to intensify atmospheric cooling and increase circulation. Carbon dioxide from the burning of fossil fuels is believed to be a most important influence on the thermal modification of the atmosphere; aerosols act to slightly heat the polar regions and cool the equatorial regions. Suggestions for future climatic research are outlined.

I-20214

Argentine Republic. Armada. Servicio Meteorológico, **Reanalysis of synoptic maps of the South Pacific and Atlantic Oceans from April 1967 to March 1968** [Reanálisis de cartas sinópticas de superficie abarcando el Pacífico y Atlántico Sur período desde abril 1967 hasta marzo 1968], *Argentine Republic. Servicio de Hidrografia Naval. Público,* 1969 H.407, Vol.2, 348p., In Spanish.

DLC QC941.A73

This is a collection of 348 synoptic maps of the circumpolar area of the southern hemisphere. They reflect daily changes in the positions of cyclones and anticyclones over southern South America, the South Atlantic and South Pacific Oceans.

I-20224

Zoller, M.H., Gladney, E.S., Duce, R.A., Hoffman, G.L., **Trace metals in the antarctic atmosphere,** *World Meteorological Organization. Publication,* 1974 No.368, Observation and measurement of atmospheric pollution, p.380-388, 18 refs.

DAS, A QC851.W6445

Between Oct. and Dec., 1970, an extensive air sampling program was carried out at McMurdo and Amundsen-Scott Stations. The McMurdo Station samples were of little value, but the South Pole samples were analyzed for concentrations of 22 trace elements. Probable sources of concentrations higher than would be expected from crustal weathering are suggested.

I-20253

Alaimo, S., **A.P.T. Station Marambio: receiver of weather satellite pictures** [Estación A.P.T. Marambio: receptora de fotografías transmitidas por satélites meteorológicos], *Antártida,* June 1975 No.6, p.16-17, In Spanish.

Marambio Station is part of the world-wide weather network of stations receiving satellite pictures. It tracks 3 daily orbits of the weather satellite ESSA-8 and six orbits per day of NOAA-2. The data is then transmitted to the communications center of the Argentine National Weather Service and thence to other nations participating in the program.

I-20283

Barnett, J.J., **Antarctic atmosphere as seen by satellites,** *Royal Society of London. Philosophical transactions,* May 26, 1977 279B(963), p.247-259, 19 refs.

A brief review is given of satellite observations of the atmosphere which are relevant to Antarctic studies. Aspects of the behavior of the Southern Hemisphere during winter are described, using Nimbus selective chopper radiometer and pressure modulator radiometer temperature sounding data which extend to mesopause levels. Emphasis is placed upon the new measurements of the mesosphere, and monthly mean Southern Hemisphere maps are given for various heights in the mesosphere during Aug., 1975, and for the months July-Sep., 1975, for the top level near the mesopause. Planetary waves in the Southern Hemisphere are found to propagate to the mesopause with diminution of the temperature amplitude above about the stratopause, and tilt westward with increasing height and decreasing latitude. (Auth.)

I-20342

Shamont'ev, V.A., **Results of meteorological observations,** Seventh voyage of the R/V Ob',.1961-62, Jerusalem, Israel Program for Scientific Translations, 1968, p.179-203, TT 68-50312, For Russian original see 3I-4115.

Regular meteorological observations were conducted on the *Ob'* during the voyage from Leningrad to Novolazarevskaya Station and Alasheyev Bight and during the return to Leningrad, and also on the continent in the Molodezhnaya Station area. Results of observations of atmospheric pressure, wind velocity and direction, air temperature and humidity, surface water temperature, and atmospheric phenomena are appended.

I-20387

Ramaswamy, C., Pareek, R.S., **Southwest monsoon over India and its teleconnections with the middle and upper tropospheric flow patterns over the Southern Hemisphere,** *Tellus*, Apr. 1978 30(2), p.126-135, In English with Russian summary. 16 refs.

The paper contains an analysis of the daily synoptic charts of July, 1972, between 50N and the South Pole and between 50E and 160E, with reference to the activity of the southwest monsoon (summer monsoon) over India. The month commenced with a spell of normally active monsoon for 8 days and ended with a spell of large-scale break in the monsoon for 9 days with two transitional phases in between. There was nearly simultaneous development in the middle-latitude westerlies in the middle and upper troposphere in both the hemispheres, especially during the break period. Blocking ridges over and near the Tasman Sea extended far towards the south-southeast during the break conditions. The pronounced troughs and ridges observed in the meridional profiles along 35N and 35S, especially along the latter during break conditions, have been discussed; and certain explanations have been put forward regarding the developments in the Southern Hemisphere. (Auth.)

I-20388

Gaĭgerov, S.S., **Winter stratospheric warmings and springtime reversals in the Antarctic and Arctic,** Boston Spa, England, British Library, [1968], 10p., N69-18173, Translated from Leningrad. Gidrometeorologicheskiĭ institut. Trudy, No.10, 1967. 10 refs.

A comparison is made between results of radiosounding and meteorological sounding in the Antarctic and in the Arctic. In winter, with intense development of the cyclonic vortex in the northern hemisphere, conditions in the Arctic stratosphere acquire features similar to those in the Antarctic stratosphere. Certain regularities appear in the onset of winter stratospheric warmings and spring reversals of circulation in the stratosphere of both polar regions. (Auth.)

I-20424

South Africa. Weather Bureau, **Climate data for Norway Station and SANAE in the Antarctic for the years 1960 to 1965,** July 1965, 11p., In Afrikaans and English.

This table contains data for Norway Station from January 1960 to January 1962 inclusive, and for SANAE from April (or in some cases June) 1962 to December 1965. A Norwegian type of screen, equipped with a fan, is used for housing the instruments. Air temperatures are measured by means of mercury, thallium and alcohol thermometers; and humidity readings are derived from the records of a Foxboro temperature and dew-point recorder, and sometimes also a hair hygrograph. Wind direction and speed at a height of 10 meters are obtained from a Munro type cup anemometer recording indoors. For the measurement of sunshine, a Fuess-type recorder with two glass spheres and a built-in heater is used. Barometric pressure is obtained from an ordinary Kew-type mercury barometer. (Auth.)

I-20425

U.S. Environmental Data Service, **Environmental inventories: Antarctic area,** Washington, D.C., Aug. 1978, 32p.

This is the first in a newly established series of publications from the National Oceanic and Atmospheric Administration's Environmental Data Service. Its purpose is to show in an easily understandable form the various types of environmental data available from EDS. The inventory illustrates in graphic form the types and amounts of data available from EDS for specific geographical regions.

I-20426

Koptev, A.P., Sakunov, G.G., **Methods and results of studying radiation properties of snow-firn covers** [Metodika i rezul'taty issledovaniĭ radiatsionnykh kharakteristik snezhno-firnovogo pokrova], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1977 Vol.342, p.90-96, In Russian. 3 refs.

Solar radiation transformation in snow and firn was studied in the Mirnyy Observatory in Oct.-Dec. 1966 at the meteorological station and on sea ice near the Mabus Cape. Penetration intensity of radiation and the backscattering radiation flux, emerging at the surface, were measured in snow of different structure and density, with simultaneous measurement of total and reflected radiation. Design and performance of measuring instruments and the results obtained are discussed.

I-20427

Dubov, A.S., Koptev, A.P., Romanov, E.V., Tsydzik, A.V., **Methods and results of the gradient and micropulsation measurements of air temperature and wind velocity** [Metodika i nekotorye rezul'taty gradientnykh i mikropul'satsionnykh izmereniĭ temperatury vozdukha i skorosti vetra], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1977 Vol.342, p.97-106, In Russian. 7 refs.

Air temperature and wind velocity variations were studied in view of developing calculation methods and obtaining data on heat transfer in the atmospheric surface layer and spectral structure of turbulence under different conditions of atmospheric stratification. Observations were carried out on the Stantsionnyy Lake, the surface of which was typical for Antarctic landscape conditions. Working principles of the measuring instruments and data processing are explained.

I-20428

Alekseeva, R.P., Andreeva, N.N., Andreev, A.D., **Critical analysis algorithm for data obtained by observation of the direct solar and the global clear sky radiations** [Algoritm kriticheskogo analiza materialov nabliudeniĭ priamoĭ solnechnoĭ i summarnoĭ radiatsii iasnogo neba], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1977 Vol.342, p.107-115, In Russian. 8 refs.

Maximum and minimum values of direct solar radiation, obtained at Antarctic and Arctic stations at various altitudes of the sun, are presented and the procedure of data processing discussed.

I-20492

Godin, R.G., **Investigation of synoptic and associated mesoscale patterns leading to significant weather days at McMurdo Station, Antarctica,** Monterey, California, U.S. Naval Postgraduate School, June 1977, 113p., AD-A046 247, Master's thesis. 6 refs.

Satellite imagery is used to supplement conventional radiosonde and aircraft data in an investigation of synoptic and associated mesoscale weather patterns leading to significant weather at McMurdo Station and the adjacent Ross Ice Shelf. Three case studies are analyzed, with concentration on the 700 and 400 mb levels. Meridional advection associated with ridging over the Ross Ice Shelf and/or the polar plateau serves as the moisture intrusion mechanism for significant weather in each case study. Mesoscale features about the McMurdo area serve as both triggering and blocking mechanisms preceding the significant weather events. Katabatic winds associated with glacial valley warming, originating from the polar plateau near McMurdo, are detected on infrared satellite imagery. Comparisons between Fleet Numerical Weather Centeral's 700 mb analyses with those of the author demonstrate the inadequacy of satellite-void analyses over the sparse data ice/snow covered south polar region. (Auth.)

I-20493

Interdepartmental Committee for Atmospheric Sciences, Washington, D.C., **National Atmospheric Sciences Program: Fiscal year 1969,** Jan. 1968, 63p. PB-178 190.

This report was prepared as part of the Interdepartmental Committee for Atmospheric Sciences' attempt to survey and evaluate the national research effort in atmospheric sciences, to examine the role and activities of Federal agencies, and to recommend appropriate allocation of responsibility among the agencies. The data is presented primarily through tables; the first shows total support by agency, the second total support in various research categories, and the third total support by agency and category. The U.S. Antarctic Research Program is listed as National Science Foundation's major effort in the field of atmospheric sciences.

I-20498

Pierotti, D., Rasmussen, R.A., **Atmospheric distribution of nitrous oxide,** *Journal of geophysical research,* Dec. 20, 1977 82(37), p.5823-5832, 35 refs.

Measurements of nitrous oxide in the earth's atmosphere over the past 40 years indicate a concentration of between 250 and 400 ppb vol/vol N2O. There is some disagreement among researchers about the degree to which nitrous oxide varies at the surface, both on land and over the ocean. Measured variations in the surface concentration of N2O range from 10% to less than 0.5%, implying atmospheric lifetimes from 1.4 years to greater than 28 years, respectively. Recent extensive measurements by the authors and co-workers indicate extremely little variation of nitrous oxide in the troposphere, with a concentration of approximately 330 ppb vol/vol. Continuous measurements made over a 3-month period showed a variation of less than 1%. Samples collected from 80N over the Arctic Ocean to 90S over Antarctica showed no significant variation. (Auth. mod.)

I-20499

Mason, A.S., **Atmospheric HT and HTO. 4. Estimation of atmospheric hydrogen residence time from interhemispheric tritium gas transport,** *Journal of geophysical research,* Dec. 20, 1977 82(37), p.5913-5916, 12 refs.

Two sampling flights were made to determine the latitudinal distribution of tritium gas in the troposphere between California and Antarctica. These data, confirmed by shipborne and land station samples, were used to parameterize the interhemispheric air exchange and the atmospheric residence time of hydrogen gas. When tritium gas is assumed to be in steady state with its sources in the northern hemisphere, and when a two-box model with a 0.6-year exchange time is used, an estimate of 6-10 years hydrogen residence time is obtained. Vertical sampling flights over the central United States show the tritium gas to be well mixed up to 14-km altitude, thus corroborating the long residence time estimate. (Auth.)

I-20515

Gubanova, S.I., Mashkovich, S.A., **Evaluation of the informational value of upper-air and satellite measurement systems** [Ob otsenke informativnosti sistemy aerologicheskikh i sputnikovykh izmereniĭ], *Meteorologiia i gidrologiia,* Dec. 1977 No.12, p.9-14, In Russian with English summary. 6 refs.

An attempt is made to compute the accuracy of time-space optimal interpolation factor in satellite aerological systems. Data on the accuracy of such analysis are given for each hemisphere separately.

I-20545

Karpova, V.M., Belinskaia, L.V., Shteĭnbok, D.B., **Feasibility of using satellite cloud-cover data to refine H-500 field analysis in the Southern Hemisphere** [O vozmozhnosti ispol'zovaniia sputnikovykh dannykh ob oblachnosti dlia utochneniia analiza polia H-500 na iuzhnom polushariĭ], *Leningrad. Gidrometeorologicheskiĭ nauchno-issledovatel'skiĭ tsentr SSSR. Trudy*, 1975 Vol.167, p.82-93, In Russian. 5 refs.

Cloud and geostrophic wind velocity fields over the Southern Hemisphere for five-day-periods are expressed in Fourier series. A linear dependence between their coefficients is predicated and the two regression coefficients connecting them calculated. Using these, the geopotential field for the sixth day is predicted from satellite cloud-cover data. Mean error per 10 trials is 4.3 dm, mean maximum error —25.1 dm. Agreement between calculated field and that observed by the sparse aerological network in the Southern Hemisphere reduces these errors to 4.0 and 20.7 dm, respectively. (Auth.)

I-20596

Loewe, F., **Polar dry deserts,** *Bonner meteorologische Abhandlungen,* 1974 Vol.17, p.195-208, Refs. p.206-208.

Polar dry deserts are ice-free regions in high latitudes in which the lack of vegetation is not solely due to cold but also to the very small precipitation. Such regions are found in the interior of Peary Land in northeast Greenland and in the Dry Valleys of southern Victoria Land in the Antarctic. The climates are described of two representative places, Brönland Hus and Lake Vanda. These polar dry desert areas have surface features similar to those of warm deserts. Special consideration is given to the saline "warm" lakes of the Dry Valleys. (Auth.)

I-20597

Loon, H. van, **Description of the geostrophic wind in the southern hemisphere,** *Bonner meteorologische Abhandlungen,* 1974 Vol.17, p.223-238, 17 refs.

The main features of the winds in the Southern Hemisphere are described by means of geostrophic winds, which have been computed from monthly mean maps of heights of standard pressure levels between sea level and 100 mb, and from daily maps of the 500-mb surface. (Auth.)

I-20611

Treshnikov, A.F., Sarukhanian, E.I., Smirnov, N.P., **Polar experiment results and plans** [Itogi i perspektivy Poliarnogo eksperimenta], *Problemy Arktiki i Antarktiki,* 1978 No.54, p.16-24, In Russian.

The main results of studies carried out recently in north and south polar regions under the POLEX program are presented. Full-scale POLEX-North-76 and the Southern Ocean experiments of similar importance are described in the greatest detail. Research topics to be incorporated into POLEX plans for the future are also outlined. A proposal for an international "Southern Ocean" program is offered.

I-20613

Koptev, A.P., Samushkin, V.A., **Collecting and processing hydrometeorological data in polar regions** [Metodicheskoe obespechenie polucheniia i obrabotki gidrometeorologicheskoĭ informatsii v poliarnykh oblastiakh], *Problemy Arktiki i Antarktiki,* 1978 No.54, p.42-51, In Russian. 9 refs.

Management studies were conducted to identify semiautomatic methods for transmittal and processing of hydrometeorological data in polar regions. Particular attention was paid to forecasting the development and implementation of ADP in this area and to fundamental methodological research questions.

I-20625

Hofmann, D.J., Rosen, J.M., **Balloon observations of a particle layer injected by a stratospheric aircraft at 23 km,** *Geophysical research letters,* June 1978 5(6), p.511-514, 15 refs.

An extensive layer of small particles was observed in association with the passage of a jet aircraft at 23 km altitude. The data are used to estimate the small particle emission index and the source strength of such aircraft at stratospheric altitudes. To date, 27 condensation nuclei (CN) soundings have been conducted, mainly from Larami, Wyoming, but also from Fairbanks, Alaska, Panama, Quixeramobim, Brazil, Mildura, Australia, McMurdo Station, and the South Pole. The impact of such flights on the stratospheric particle population is probably negligible; however, when the results are applied to the currently projected Concorde SST fleet in the stratosphere and the commercial jet fleet in the upper troposphere, both are estimated to contribute non-negligible equilibrium concentrations of such particles to their respective altitude regimes. (Auth. mod.)

I-20626

Prior, E.J., Oza, B.J., **First comparison of simultaneous IRIS, BUV, and ground-based measurements of total ozone,** *Geophysical research letters,* June 1978 5(6), p.547-550, 15 refs.

This paper presents the first comparison of the zonally-averaged global distribution of total ozone obtained simultaneously using measurements from the Nimbus IV BUV (backscattered ultraviolet) experiment, the Nimbus IV IRIS (infrared interferometer spectrometer) experiment, and the ground-based Dobson and ozonometer instruments of the World Meteorological Organization. The measurements are compared with respect to differences between the measured latitudinal and seasonal variations of total ozone, with emphasis on any systematic discrepancies that appear to be related to differences in the sensing methodologies or instruments. While the zonal averages of the two satellite techniques agree quite well at low latitudes, the results are consistently higher for IRIS than for the BUV above mid-latitudes in both the Northern and Southern Hemispheres. In the Southern Hemisphere 49 out of 50 IRIS zonal averages between 25S and the South Pole are greater than the BUV averages. These persistent differences may be evidence of disparities between the infrared and ultraviolet methodologies or instrumentation. The BUV and ground-based ultraviolet averages agree better in general with each other than with the infrared IRIS averages. (Auth. mod.)

I-20633

Smirnov, N.P., **Polar Experiment South-76** [Poliarnyĭ eksperiment IUg-76], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1978 Vol.345, p.4-11, In Russian.

The 1976 aims and scientific program of POLEX-South, part of the joint Soviet-American effort to study the world ocean, are set forth. The organizational structure, itinerary and work plan are described and the major results briefly summarized. (Auth.)

I-20638

Alekseev, G.V., Afanas'ev, B.V., Smirnov, N.P., **Antarctic polar front in the Drake Passage** [Antarkticheskiĭ poliarnyĭ front v prolive Dreĭka], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1978 Vol.345, p.56-62, In Russian. 12 refs.

The Antarctic Polar Front structure in the Drake Passage was studied during the summer of 1976. Vertical temperature and salinity profiles in the frontal zone and on both sides of it and temperature profiles in the frontal zone based on thermohaline data gathered by sounding are presented. The position of the front in the 1976 summer is compared with its long-term average location and further research projects are proposed.

I-20642

Lutsenko, E.I., **Features of atmospheric processes over the Drake Passage and nearby portions of the Southern Ocean, summer 1976** [Osobennosti atmosfernykh protsessov nad prolivom Dreĭka i prilegaiushchimi k nemu raĭonami IUzhnogo okeana letom 1976 g.], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1978 Vol.345, p.86-91, In Russian. 2 refs.

By using daily telephoto montages of the area over and around the Drake Passage, features of atmospheric processes were analyzed. Charts showing trajectories and periodicity of cyclonic cloud configurations and of overall cloud cover were compiled. Based on these findings, a series of conclusions about large-scale characteristics of summer atmospheric circulation is made.

I-20643

Vasil'ev, V.F., Druzhinin, E.I., **Summer turbulent atmosphere-ocean exchange in the Drake Passage in 1976** [Turbulentnyĭ obmen mezhdu atmosferoĭ i okeanom v raĭone proliva Dreĭka v letniĭ period 1976 g.], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1978 Vol.345, p.92-98, In Russian. 7 refs.

On the basis of standard meteorological observations, turbulent heat and moisture flow and number of movements in the Drake Passage in Jan. and Feb. 1976 were calculated. Variability of the flows in various zones and the relationship between them and meteorologi-

cal factors are estimated. An analysis is given of turbulent flow under various synoptic conditions and the results compared with 1975 data.

I-20644
Vasil'ev, V.F., Ivanov, K.N., Smirnov, N.P., **Free-atmosphere energy characteristics over the Drake Passage in the summer of 1976** [Energeticheskie kharakteristiki svobodnoĭ atmosfery nad prolivom Dreĭka v letniĭ period 1976 g.], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1978 Vol.345, p.99-115, In Russian. 7 refs.

In Jan. and Feb. 1976 atmospheric energy characteristics (kinetic and potential energy flow, as well as heat and moisture flow) were calculated for 20 isobaric surfaces from sea level to 10 mb. Vertical structure and temporal patterns of atmospheric energy features are analyzed. An estimate is made of the role of turbulent and advective components in overall formation of energy flow. Energy parameters in the Drake Passage are compared for the 1975 and 1976 seasons and long-term means.

I-20646
Malinin, V.N., Nikolaev, IU.V., **Relationship between the antarctic oceanic polar front and free-atmosphere processes** [O sviazi antarkticheskogo poliarnogo fronta v okeane s protsessami v svobodnoĭ atmosfere], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1978 Vol.345, p.122-124, In Russian. 3 refs.

Using data gathered by four daily atmospheric soundings carried out over a 33-day period (13 Jan.-15 Feb. 1976), the authors analyze free-atmosphere characteristics over the Drake Passage for three regions: north of the frontal zone, the zone itself, and south of the frontal zone. It is shown that in these areas significant differences in air temperature distribution, geopotential and wind speed exist in the lower and middle troposphere.

I-20647
Smirnov, V.M., **Zonal mean characteristics of wind speed in the southern hemisphere** [Zonal'no-osrednennye kharakteristiki skorosti vetra v IUzhnom polushariĭ], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1978 Vol.345, p.125-132, In Russian. 7 refs.

Computed zonal mean latitudinal and meridional components of wind speed for four months representing the different seasons were analyzed. By using new data on the actual wind regime in the southern hemisphere, the author is able to refine zonal mean atmospheric circulation charts and to describe a number of their characteristics.

I-20653
Martin, P.J., Peel. D.A., **Spatial distribution of 10 m temperatures in the Antarctic Peninsula,** *Journal of glaciology,* 1978 20(83), p.311-317, In English with French and German summaries. 19 refs.

Temperatures from 10 m bore holes have been analyzed to determine the spatial variation of mean annual surface temperature over the Antarctic Peninsula. In general there is a decrease in temperature of 0.84 deg per degree latitude southwards combined with an altitude lapse rate of 0.68 deg per 100 m. There is a sharp divide between the continental type climate of the east coast and a maritime climate of the central and western regions. Temperatures are approximately 7 deg lower along the east coast compared with those at sites of a similar altitude and latitude on the west. (Auth.)

I-20678
Voskresenskiĭ, A.I., **Problems of antarctic meteorology** [Nekotorye problemy meteorologii Antarktidy], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten',* 1978 No.97, p.86-103, In Russian. 23 refs.

The state of knowledge about weather in Antarctica and its effects on southern hemisphere weather is reviewed. Air temperature and wind direction, radiation balance and atmospheric structure are summarized in charts. Further research in this field will be carried out largely under the POLEX-South project.

I-20694
Makhon'ko, K.P., Martynenko, V.P., Churkin, V.N., **Assessment of nuclear blast product transfer from the southern hemisphere to the northern in relation to radioisotope concentration in the atmosphere** [Otsenka perenosa produktov iadernykh vzryvov iz IUzhnogo polushariia v Severnoe po otnosheniiam kontsentratsii radioizotopov v atmosfere], *Obninsk. Institut eksperimental'noĭ meteorologii. Trudy,* 1977 No.6(64), p.17-27, In Russian. 12 refs.

The ratio between mean monthly concentrations of short half-life isotopes in the lower atmosphere and long half-life isotopes is used to determine time of arrival of nuclear fallout in the area under study and to identify it. The front along which this ratio increases was observed at different times in the northern (USSR, USA) and in the southern hemisphere (Antarctica, South America). This fact indicates transport time over the equator—3-5 months in 1970-71, 1.5 months in 1968. Discrepancy between observed and theoretical Sr-89/Sr-90 and Cs-141/Cs-137 ratios is explained by the existence of long half-life radioisotopes from previous blasts.

I-20695
Zhukov, V.A., **Global transport rate for radioactive products and behavior of Cesium-137 in the antarctic atmosphere in 1969-70** [Skorost' global'nogo perenosa radioaktivnykh produktov i osobennosti povedeniia tseziia-137 v atmosfere Antarktidy po nabliudeniiam v 1969-1970 gg.], *Obninsk. Institut eksperimental'noĭ meteorologii. Trudy,* 1977 No.6(64), p.27-33, In Russian. 7 refs.

Tracer studies were done at Molodezhnaya Station. Mean meridional rates in Antarctica of 2.5 km/hr in summer and 5 km/hr in winter were determined for short half-life radioactive fallout from northern hemisphere blasts. A winter decrease in concentration of Cs-137 aerosols concurrent with the descent of polar night was noted; this phenomenon is peculiar to the polar area of the hemisphere. It is perhaps the result of conditions of formation of the aerosols, and of illumination conditions in the stratosphere. A number of additional features of Cs-137 aerosol behavior in the spring and summer are noted.

I-20699
Shaw, G.E., **Properties of the background global aerosol and their effects on climate,** *Science,* June 25, 1976 192(4246), p.1334-1335, 14 refs.

Properties of the aerosols above Hawaii, Alaska, and the South Pole are derived from sun photometry at several wavelengths. The mass loading of aerosol material is several milligrams per square meter. At the South Pole the mean particle radius is 0.04 micrometer; at Hawaii in March 1975, there was a thin volcanic layer with a mean particle radius of 0.1 micrometer. The aerosols cause heating of the earth-atmosphere system at the poles and cooling at low latitudes. (Auth.)

I-20718
Voskresenskiĭ, A.I., **Meteorological problems of the Southern Ocean** [Meteorologicheskie problemy IUzhnogo okeana], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten'*, 1978 No.98, p.5-15, In Russian. 21 refs.

A review of major meteorological features of the Southern Ocean area is undertaken with a view to identifying problems requiring further research. The following topics are offered as bases for international efforts in the meteorological study of the Southern Ocean: circulation and heat exchange mechanisms over Antarctica; estimates of magnitude and temporal and spatial variability of advective heat flow, humidity and energy exchange and their balance; radiation balance research and establishment of standard actinometric atmospheric information so that non-adiabatic components of temperature change can be assessed; relative effect of land and sea on climate; variability of physical mechanisms such as aerosols, ice and snow and their effect on climate; and development of climatic and atmospheric circulation models for forecasting purposes.

I-20728
Kolosova, N.V., **Wind regime features on Deception Island** [Osobennosti vetrovogo rezhima o. Desepshen], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten'*, 1978 No.98, p.69-75, In Russian. 5 refs.

Various features of the wind regime on Deception Island are set forth in charts and compared with other antarctic and subantarctic stations. Wind frequency and intensity is given for 16 points of the compass for September and December. Air mass exchange is also analyzed.

I-20741
Bardin, G.I., Ivanov, K.N., **Results of a vertical atmospheric profile on the Bellingshausen-Molodezhnaya route (Nov. 1973)** [Rezul'taty vertikal'nogo razreza atmosfery na perekhode Bellinsgauzen-Molodezhnaia (noiabr' 1973 g.)], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1978 Vol.68, p.106-109, In Russian. 5 refs.

As the *Professor Zubov* sailed from Bellingshausen to Molodezhnaya in November 1973, she took a series of aerosynoptic profiles. The route was marked by a chain of cyclones, the trajectory of which was somewhat to the south of the ship's course. The tropopause fluctuated markedly, reaching a maximum height of 12 km. Air temperature, wind speed and other parameters are shown in charts and discussed.

I-20742
Savitskiĭ, G.B., **Features of aviation meteorology in Antarctica** [Nekotorye osobennosti meteorologicheskogo obespecheniia poletov v Antarktide], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1978 Vol.68, p.110-112, In Russian. 4 refs.

Several features of aviation weather service are discussed on the basis of aerological data, ground-level and high-altitude weather charts used in combination with satellite data. There are four typical weather situations encountered by antarctic pilots; each is described briefly.

I-20764
Sokolov, S.T., **Katabatic wind in the Molodezhnaya Station area and forecasting it** [Stokovyĭ veter v raĭone stantsii Molodezhnoĭ i ego prognoz], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1978 Vol.67, p.50-54, In Russian. 9 refs.

All instances of very strong and hurricane-force winds in 1973 are examined and cases of purely katabatic winds with a 140 deg azimuth identified. A seasonal analysis was done of cyclonic activity accompanying katabatic winds. It was noted that exceptionally strong katabatic winds occurred with very strong southward currents in the troposphere over the continent (66-75 deg south) between Molodezhnaya and Novolazarevskaya Stations. A nomogram is presented to determine katabatic wind velocity on the basis of radiosonde data.

I-20781
Hogan, A.W., Barnard, S., **Seasonal and frontal variation in antarctic aerosol concentrations**, *Journal of applied meteorology*, Oct. 1978 17(10), p.1458-1465, 22 refs.

Observations at the South Pole show the seasonal variation in aerosol concentration at the surface to be of large relative amplitude. The concentrations reach a very low value beneath the strong nocturnal inversion in winter. The mean concentration begins to rise near the time of astronomical sunrise. Variations in aerosol concentration and size accompany meteorological events. Extreme sky clarity and subsequent lowering of temperature and strengthening of the near-surface inversion in winter months are accompanied by nearly unmeasurable aerosol concentrations of 3-5/cu cm; winter warming is sometimes accompanied by increases in aerosol concentration to 50/cu cm. Frontal passage aloft (at the 500 mb level) during summer months, and/or strong subsidence of dry air, is often accompanied by large increases in aerosol in the smaller size classes. Advection of warm moist air from the Weddell Sea and frontal passage at lower levels are accompanied by an increase in aerosol particles in the larger size classes. Recent flight data indicate that the moist layer, just above the surface inversion at 650-550 mb over the South Pole, is relatively rich in particulate material. Mixing of this air downward can then be the source of increased aerosol concentration at the surface and increased particle precipitation to the ice cap. (Auth. mod.)

I-20786
Prabhakara, C., Rodgers, E.B., **Study of the lower stratospheric thermal stucture and total ozone from Nimbus-4 IRIS**, *U.S. National aeronautics and Space Administration. Technical note*, Jan. 1976 NASA TND-8134, 35p., N76-14710, 19 refs.

The global distribution of temperature in the stratosphere from 100-10 mbar and the total ozone in the atmosphere are remotely sensed from the Nimbus-4 IRIS measurements for a period of about one year. The temperature and ozone data are presented in the form of monthly mean global maps. The standard deviations of temperature and ozone with respect to zonal averages are calculated. The mean and the variable state of the stratosphere are discussed with the help of these observations. The lower stratosphere in the tropical regions reveals a significant wavenumber 1 pattern in the circulation. The arctic and antarctic stratospheric winter circulation regimes display a different behavior, apparently due to the ocean and orographic differences. (Auth.)

I-20823
World Meteorological Organization, **Polar Sub-programme**, *Global Atmospheric Research Program. GARP publications series*, 1978 No.19, 47p., Refs. passim.

This report is intended to define a polar sub-program within the objectives and planning framework of the Global Atmospheric Research Program (GARP.) The objectives of the program are to identify and study polar processes relating to the improvement of weather prediction from general circulation models, and to develop a basis for understanding the role of arctic and antarctic ice in climate dynamics. The report provides an overview of the GARP polar sub-program and its scientific background, reviews the Polar Experiment (POLEX) to be carried out simultaneously with the First GARP Global Experiment (FGGE), discusses polar processes in climate modeling, and

describes climate-related experiments and monitoring for the program.

I-20827

Fukunishi, H., Iwabuchi, M., Yoshino, T., **Data acquisition from EXOS-A (Kyokkô) at Syowa Station, Antarctica,** *Antarctic record,* Sep. 1978 No.62, p.71-79, In Japanese with English summary.

Telemetry signals from the first Japanese polar orbiting satellite, EXOS-A (Kyokko) are being received at Kagoshima, Churchill and Showa Satellite Earth Stations. In this report, the progress of the data acquisition at Showa is described. (Auth.)

I-20859

Johnson, A.W., **Implications of outer space technology on development in meteorology and meteorological services,** *World Meteorological Organization. WMO bulletin,* July 1975 24(3), p.162-170.

Developments in the meteorological satellite program since the first TIROS satellite was launched in Apr. 1960, and the inception of geostationary satellites are summarized. Among the applications of weather satellite imagery discussed and illustrated are the following: the characteristics of the Gulf Stream; analysis of the daily ice field in the Arctic and Antarctic; iceberg formation and drift in the Antarctic; tornado and severe storm warning; vertical temperature profiles and moisture soundings; the distribution of snow; measurements of wind from cloud movements; and hurricane formation over tropical areas. The availability of the data and international cooperation in future satellite programs are discussed.

I-20883

Angell, J.K., Korshover, J., **Global temperature variation, surface-100 mb: an update into 1977,** *Monthly weather review,* June 1978 106(6), p.755-770, 28 refs.

Based on a network of 63 well-spaced radiosonde stations around the world, the global temperature within the surface to 100 mb layer was lower in 1976 than in any year since commencement of the record in 1958, and the 1976 surface temperature equaled the global record for the lowest temperature set in 1964; but even so, the trend in global temperature since 1965 has been small compared to the 0.5C decrease during 1960-65. The rate of increase of carbon dioxide at Mauna Loa and the South Pole is augmented in the warm phase of the tropical oscillation, presumably because of a relation between atmospheric and oceanic temperature. There is evidence for a consistent quasi-biennial variation in temperature at all latitudes, with the temperature approximately 0.1C higher than average about six months prior to the quasi-biennial west wind maximum at 50 mb in the tropics. The spatial and temporal variability in temperature have tended to increase over the period of record, in accord with the increase in meridional temperature gradient in both hemispheres and the indicated increase in lapse rate in the Northern Hemisphere. (Auth. mod.)

I-20884

Kelly, G.A.M., **Interpretation of satellite cloud mosaics for Southern Hemisphere analysis and reference level specification,** *Monthly weather review,* June 1978 106(6), p.870-889, 15 refs.

A semi-objective procedure has been developed to modify mean sea level pressure and 1000-500 mb thickness using cloud vortex patterns obtained from satellite imagery. The method, designed for operational use, particularly in the Southern Hemisphere up to 60S, is capable of reproducing synoptic-scale structure which can be deduced from cloud data, but which is often difficult to incorporate in a numerical analysis system using "bogus" observations. Two case studies are used to illustrate its application: the first demonstrates the ability of the procedure to correct large-scale "first guess" errors, and the second compares results of a forecast/analysis cycle using this method with operational products of the National Meteorological Analysis Centre of the Australian Bureau of Meteorology. (Auth. mod.)

I-20885

White, G.H., Wallace, J.M., **Global distribution of the annual and semiannual cycles in surface temperature,** *Monthly weather review,* June 1978 106(6), p.901-906, 9 refs.

This study is based on the long-term mean monthly grid-point data assembled for the Northern and Southern Hemispheres. The annual march of surface temperature is documented on a global basis by mapping the amplitudes and phases of the annual and semiannual cycles in a vectorial format. Among the most noticeable features of the semiannual cycles are the large amplitudes in the polar regions where the phase vectors for the second harmonic tend to be parallel to those for the first harmonic, especially over Antarctica. (Auth. mod.)

I-20899

Fitch, B., Coulson, K.L., **Polarizing radiometer measurements of skylight at South Pole station, Antarctica,** *Society of Photo-Optical Instrumentation Engineers. Proceedings,* 1977 Vol.112, p.184-190, 5 refs.

In an effort to develop an index of atmospheric turbidity, measurements of the polarization and intensity of light from the sunlit sky were made at the South Pole station. Preliminary data from these measurements at wavelengths of 0.398 and 0.70 microns taken in the vertical plane through the sun are shown and compared with similar data computed for a pure molecular atmosphere overlying a highly reflecting Lambert type surface. The general features of the measured fields are similar to those of the theoretical model, but some consistent discrepancies exist for both the intensity and degree of polarization. It is suggested that the discrepancies are probably due to the fact that a Lambert type surface is not a good approximation to the actual snow surface which exists at the South Pole. (Auth.)

I-20934

Lettau, H.H., Riordan, A.J., Kuhn, M., **Air temperature and two-dimensional wind profiles in the lowest 32 meters as a function of bulk stability,** *American Geophysical Union. Antarctic research series,* 1977 25(6), Meteorological studies at Plateau Station, Antarctica. Paper 6, p.77-91, 25 refs.

DLC QC994.9.M47

A total of 270 profiles of temperatures and the two horizontal wind components measured simultaneously from a 32-m tower are analyzed. Extraordinarily systematic sorting of profile structure according to bulk stability is found during the sunless period. Assumptions of wind and temperature profile similarity and the existence of well-defined surface layer conditions with quasi-height independence of eddy fluxes of momentum components or heat clearly do not apply to the inversion layer above the antarctic plateau. There is no evidence that stability suppression of turbulence causes transition to laminar flow. (Auth.)

I-20935

Kuhn, M., Lettau, H.H., Riordan, A.J., **Stability-related wind spiraling in the lowest 32 meters,** *American Geophysical Union. Antarctic research series,* 1977 25(7), Meteorological studies at Plateau Station, Antarctica. Paper 7, p.93-111, 12 refs.

DLC QC994.9.M47

From wind speed, wind direction, and temperature measured at 10 levels on the 32-m tower at Plateau Station, the dynamic effects of internal and surface friction and atmospheric stability are analyzed. A well-developed temperature inversion over the gently sloped terrain

causes a significant shear of geostrophic wind close to the surface. The effect of this topographically fixed thermal wind on the observed hodographs is documented for eight classes of stability and nine classes of azimuth of surface stress. A method is described by which the ageostrophic components of the wind spiraling are calculated without knowledge of the pressure gradient. It makes use of the arbitrary assumption that the influence of surface friction vanishes at a height less than 70 m above the ground. Extrapolation of wind and temperature data up to 70 m is based on considerations of the change of profile characteristics with height and stability in the range of the tower. The ageostrophic wind components are used to compute surface drag, eddy stress, frictional energy dissipation, and coefficients of eddy diffusivity of momentum K. A level of maximum K was invariably found between 4 and 8 m. If at the 1-m level the Richardson number exceeds 0.05, the ageostrophic hodographs progressively lose spiral shape. (Auth.)

I-20936

Riordan, A.J., **Variations of temperature and air motion in the 0- to 32-meter layer at Plateau Station, Antarctica,** *American Geophysical Union. Antarctic research series*, 1977 25(8), Meteorological studies at Plateau Station, Antarctica. Paper 8, p.113-127, 12 refs.

DLC QC994.9.M47

Annual, diurnal, and short-term variations in the lower inversion layer at Plateau Station, Antarctica, are described and illustrated. Temperature and wind profile data measured in 1967 from 10 levels on a 32-m tower show that the inversion persists throughout much of the year and even remains strongly established during diurnal heating cycles. Cyclic variations in the wind velocity during the summer suggest that subsidence accounts for a portion of the diurnal heating, but eddy transfer is also important. Large variations in the inversion during the winter are investigated in three case studies. The upward propagation of the inversion is related to changes in the surface energy balance. Gravity waves and convergence-induced vertical motion are suggested as mechanisms to account for rapid changes in the temperature profiles. (Auth.)

I-20957

Kellogg, W.W., **Effects of human activities on global climate; a summary, with consideration of the implications of a possibly warmer earth,** *World Meteorological Organization. Technical note*, 1977 No.156, 47p., WMO-No.486, Refs. p.37-47.

Studies of a number of different climate system models with widely varying degrees of complexity have led to the following conclusions. The largest single effect of human activities on climate is due to the increase in atmospheric carbon dioxide concentration resulting from burning fossil fuels. Virtually all of the other major activities of mankind also contribute to warming of the lower atmosphere, i.e., through injection into the atmosphere of airborne particles and of other trace gases (i.e., chlorofluoromethanes, nitrous oxide, etc.), and through the direct addition of heat. A best estimate of the resultant warming of the mean surface temperature of the earth due to human activities is about 1C by 2000 AD and about 3C by 2050 AD, with an uncertainty of roughly a factor of two. Warming of the polar regions is expected to be three to five times greater than the global average. The warming would almost certainly have a major influence on the extent of arctic and antarctic sea ice, and would eventually cause a change in the total volume of the major ice sheets of Greenland and the Antarctic, but the corresponding change in sea level cannot yet be predicted. Areas of recommended climate research are outlined.

I-20999

Fujii, Y., Kawaguchi, S., **Meteorological data at Mizuho Station, Antarctica in 1977-1978,** *Japanese Antarctic Research Expedition. JARE data reports*, Nov. 1978 No.47, 107p., 2 refs.

The long-term meteorograph at Mizuho Station provided continuous records of wind direction and speed, atmospheric pressure and air temperature. A Moll-Gorczynski type solarimeter was used for the measurement of global solar radiation. Other weather elements, i.e., clouds, visibility and weather phenomena, were observed visually daily. The data collected from Jan. 1977 to Jan. 1978 are summarized in tables.

I-21002

Schoeberl, M.R., **Stratospheric warmings: observations and theory,** *Reviews of geophysics and space physics*, Nov. 1978 16(4), p.521-538, 89 refs.

Winter stratospheric warming observations and associated theories are reviewed. Historically, major warmings occur on the average of every other year and may thus be considered an important climatological component of the winter stratosphere. The warming results from eddy heat transport from equatorial latitudes into the polar regions. The eddies chiefly responsible for the transport are the planetary scale waves, which may attain amplitudes twice their monthly average values in the lower stratosphere prior to the warming. In the troposphere this amplitude increase is associated with the development of blocking patterns. The warming is shown to have a strong nonzonal component in the upper stratosphere, a feature not fully recognized by modelers. The critical level theory of the sudden stratospheric warming provides a simple dynamic explanation of the event. Yet mechanistic numerical models, which have reproduced many features of the warming, exhibit results which tend to indicate that the interaction of planetary waves and the mean flow occurs through a variety of mechanisms, including transience and damping. The close connection between blocking in the troposphere and the development of the sudden warming is likely to be a result of resonance of free planetary waves in a stratospheric wind cavity. (Auth.)

I-21004

Newell, R.E., Wu, M.-F., **Pilot study of concomitant changes in total ozone and atmospheric general circulation,** *Royal Meteorological Society, London. Quarterly journal*, Oct. 1978 104(442), p.999-1003, 24 refs.

Correlation between monthly total ozone anomalies from long-term monthly means shows a pattern with latitude that is consistent with the concept of Hadley cell circulation modulation. The anomalies are positively correlated with temperature at middle latitudes. Long-term trends appear to be related to changes in the overall intensity of the Hadley cell circulation and in tropospheric meridional temperature gradients. Macquarie and Argentine Is. station data were used in the analysis. (Auth. mod.)

I-21006

Renard, R.J., Foster, M.S., **Airborne Research Data System (ARDS): Description and an evaluation of meteorological data recorded during selected 1977 antarctic flights,** *Naval Postgraduate School, Monterey, CA. Technical report*, May 1978 NPS63-78-002, 87p. ADA 057 996.

The paper describes the airborne research data system (ARDS) and presents an evaluation of meteorological data recorded by it while installed aboard a United States Navy LC130R aircraft flown by the Antarctic Development Squadron Six (VXE-6), in support of the National Science Foundation's research programs in Antarctica. The evaluation consists of a comparison of wind, temperature and mois-

ture data, collected on four flight missions with similar data from Antarctic and New Zealand rawinsonde observations, as well as 50 kPa analyses. The results demonstrate some of the capabilities and limitations of the ARDS in logging meteorological data for operational as well as scientific research. Recommendations for improving the credibility of the sensed parameter data are included. (Auth.)

I-21014

Flint, R.F., **Present state of knowledge about late Cenozoic glaciation** [Sovremennyĭ uroven' znaniĭ o pozdnekaĭnozoĭskom oledenenii], Paleogeografiia i perigliatsial'nye iavleniia pleĭstotsena, Moscow, Nauka, 1975, p.160-161, In Russian. 9 refs.

DGS,364.P174

Traces of pre-Pleistocene glaciation are established for a number of areas: in northern Iceland, 1.9 mya and perhaps 3 mya (there were at least 9 glaciations after this time); in Antarctica, more than 2.7 mya, more than 3.4 mya, also between 3.7 and 3.9 mya and more than 3.4 mya; in Alaska several glaciations between 3 and 10 mya. Thus at least at high latitudes glaciation developed much earlier than the Pleistocene.

I-21050

Lepel, E.A., Stefansson, K.M., Zoller, W.H., **Enrichment of volatile elements in the atmosphere by volcanic activity: Augustine volcano 1976,** *Journal of geophysical research,* Dec. 20, 1978 83(C12), p.6213-6220, 26 refs.

Samples of atmospheric particulate material were collected in the plume of Augustine volcano in Feb. 1976 by using the high-volume filtration system aboard the National Center for Atmospheric Research Lockheed Electra. The samples were analyzed for 38 elements by a combination of instrumental neutron activation analysis and atomic absorption spectrometry. The results indicate that the volatile elements Zn, Cu, Au, Pb, As, Cd, Cl, Br, Se, Sb, Hg, and S are enriched in the atmospheric samples in relation to bulk ash by factors ranging from 10 to several thousand. The enrichments compare closely with those observed for other volcanic emanations and for background aerosols observed at the South Pole. Samples collected early in the eruption cycle had a much higher quantity of volatile elements in relation to ash than the later samples, indicating a substantial change in the emission of volatiles with time and eruptive cycle. (Auth.)

I-21054

Maenhaut, W., Zoller, W.H., **Determination of the chemical composition of the South Pole aerosol by instrumental neutron activation analysis,** *Journal of radioanalytical chemistry,* 1977 37(2), p.637-650, 23 refs.

Atmospheric particulate samples were collected at the geographic South Pole, using cellulose and polycarbonate filters and cascade impactors. The samples were analyzed for 40 elements by instrumental neutron activation analysis. From the filter samples atmospheric concentrations for 33 elements could be obtained. The highest atmospheric concentrations were found for S: 49 ng/standard cubic meter (SCM) of air, Na: 3.3 ng/SCM and Cl: 2.6 ng/SCM. In the cascade impactor samples, only a few elements were observed above blank. For these elements it could be concluded that they are associated for over 80-90% with submicron size particles. (Auth.)

I-21062

Pinto-Coelho, A., **Antarctic influence on Brazil's environment,** *Ciencia e cultura,* Jan. 1977 29(1), p.33-35, 10 refs.

The ice accumulation and the sharp meteorological alterations characteristics of the Antarctic region are admitted as the principal factors conditioning Southern Brazilian (and South American) environment. Studies of those factors coupled with observations in the Southern Brazilian littoral suggest a preliminary model, which may be useful to predict global alterations in the Southern Hemisphere. The model has already worked out in the sequential prevision of cold winter, dryness, rainy spring and stormy summer (1975-1976). Furthermore, the model points out a very cold winter for the Southern Hemisphere in 1976. Those studies may be helpful in the environmental correlations and in the economic activities of the region, as fishing, clothing industry and coffee cultivation. (Auth.)

I-21077

Hogan, A.W., **Dry ice = Antarctica,** *Frontiers,* Autumn 1978 43(1), p.17-19.

DSI 505.73F93

This paper discusses Antarctica's unique climate with emphasis on ice crystal formation. The source of the moisture which moves over the Polar Plateau and causes the formation of the ice crystals, which are almost always in the air, is not fully understood. Some investigators hypothesize that saturated air persists because antarctic air is sometimes so clean that there are too few particles of dust or other solid substances to act as ice nuclei or centers for freezing. Others propose that saturated particle-free air is common over the Polar Plateau, and a few ice crystals from higher cirrus clouds passing over the continent precipitate to levels near the surface to provide the initial seeding of the saturated air. The crystals which result shed fragments which grow into additional crystals, creating a chain reaction of growth and producing spectacular displays. The presence of saturated air on cloudless days has been verified through seeding experiments. The importance of antarctic ice to world climate and weather is stressed.

I-21105

Pittock, A.B., ed, **Climatic change and variability: a southern perspective,** New York, Cambridge University Press, 1978, 455p., Based on a conference at Monash University, Melbourne, Australia, 7-12 December 1975.

DLC QC981.8.C5C56

This volume contains a number of papers that were presented at a conference and later organized under the following headings: physical basis of climate; long-term climatic record; patterns of short-term change and variability; models of climatic change; modification of climate; effect of climate change and variability on man; and progress and prospect. For selected papers see F-21113, I-21106 through I-21112, or 33-2008 through 33-2012.

I-21106

Hamon, B.V., Godfrey, J.S., **Role of the oceans,** Climatic change and variability: a southern perspective, New York, Cambridge University Press, 1978, p.31-52.

DLC QC981.8.C5C56

Large-scale features of the structure and circulation of the southern hemisphere oceans, including the major water-mass boundaries and the antarctic pack ice, are discussed. The authors describe some implications of ocean dynamics for climatology.

I-21107

Frakes, L.A., **Cenozoic climates: Antarctica and the Southern Ocean,** Climatic change and variability: a southern perspective, New York, Cambridge University Press, 1978, p.53-69.

DLC QC981.8.C5C56

Evidence for climatic variations in the antarctic region is examined for the last 4.5 m.y. Once antarctic climatic periods are established, the authors discuss the correspondence in time of climatic events in the Antarctic and the Southern Ocean with those observed elsewhere. A few climatic events of considerable magnitude seem to be represented in both hemispheres: dramatic cooling of surface water in the early Oligocene: extensive ice build-up at high latitudes in the middle and late Miocene; intensive ice accumulation during the mid-

die Gauss epoch; and the last 110,000-year cycle. The analogues of some major events from high southern latitudes remain unrecorded in the north.

I-21108
Shackleton, N.J., **Some results of the CLIMAP project,** Climatic change and variability: a southern perspective, New York, Cambridge University Press, 1978, p.69-76.
DLC QC981.8.C5C56

CLIMAP is a multi-institutional project for the study of climatic change. It is funded in the United States under the International Decade of Ocean Exploration and five universities are involved. A dramatic CLIMAP contribution is the construction of a surface temperature map of the oceans at the height of the last glacial, about 18,000 years ago. It is shown that recent climatic changes in the Southern Hemisphere have been essentially synchronous with those of the north during the Pleistocene, though in detail southern temperature led northern ice volume recorded by about 3,000 years.

I-21109
Jenssen, D., **Climatic and topographic changes from glaciological data,** Climatic change and variability: a southern perspective, New York, Cambridge University Press, 1978, p.77-81.
DLC QC981.8.C5C56

Isotope ratios indicating surface temperature variations will correspond to lower temperature simply due to higher surface elevations as well as to climatic change. How to separate the indications of elevation change from those of true climatic fluctuations was the problem the author addressed. He develops a theory and model, then compares results with observed data from Camp Century, Vostok and Byrd cores, showing many similarities.

I-21110
Flohn, H., **Abrupt events in climatic history,** Climatic change and variability: a southern perspective, New York, Cambridge University Press, 1978, p.124-134.
DLC QC981.8.C5C56

Three possible external causes for abrupt climatic changes are discussed: solar events (a change in the solar constant); frequent volcanic activity; and a surge of the antarctic ice sheet. The author proposes that an antarctic surge, potentially catastrophic in its effect on world climate, could be perhaps prevented by concerted international efforts if early warning were provided by sea ice monitoring.

I-21111
Williams, J., Van Loon, H., **Trends of winter temperature in the Southern Hemisphere,** Climatic change and variability: a southern perspective, New York, Cambridge University Press, 1978, p.191-199.
DLC QC981.8.C5C56

For the southern hemisphere an analysis of temperature and pressure trends was undertaken for the period 1955-69 and the results summarized in charts. Winter temperature data for the period and the regression lines through them are shown for the SANAE and McMurdo Stations. It is interesting to note that within this 15-yr period they show opposite trends. Since data are unavailable over wide ocean areas, a complete hemispheric map is not possible. Distribution of temperature trends suggests that south of 40S much of the change occurs within wave number one.

I-21112
Chappell, J., **Theories of Upper Quaternary ice ages,** Climatic change and variability: a southern perspective, New York, Cambridge University Press, 1978, p.211-225.
DLC QC981.8.C5C56

The author reviews the status of various theories concerning the triggering of ice ages. With regard to the idea that periodic major surges of the antarctic ice sheet may be a causal factor, he comments that, although conclusive evidence has not been adduced for this theory yet, particularly by proving a sudden rise in a sea level followed by a slower eustatic fall, antarctic surging is still a possible explanation for ice age initiation.

I-21121
U.S. National Weather Records Center, **Climatological data for antarctic stations, No.10, January 1967-December 1968,** Asheville, N.C., May 1970, 252p. AD-713 187.

The publication summarizes available surface and rawinsonde observations for the period Jan. 1967-December 1968, from Amundsen-Scott and Byrd Stations and from USNS *Eltanin.* It was compiled at the National Weather Records Center, Asheville, N.C., in cooperation with the U.S. Weather Bureau. (Auth.)

I-21139
Adamenko, V.N., Milashenko, G.P., Nezhenkin, V.I., **Investigating the connection between the pressure field aloft and ground-level meteorological conditions in Antarctica** [K otsenke sviazi vysotnogo baricheskogo polia s prizemnymi meteorologicheskimi usloviiami v Antarktide], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy.* 1977 Vol.64, p.72-87, In Russian. 6 refs.

A model which describes the mechanisms of pressure and isobaric surface variations in antarctic areas both qualitatively and quantitatively is offered. There are correlations between the height of the 500-mb surface and ground-level pressure and air temperature in various parts of continental Antarctica, the Subantarctic and on Southern Ocean islands. A method of estimating the altitude of the 500-mb surface for antarctic stations is presented, using data from the stations. Verification of theoretical predictions by field data indicates that, even without the suggested refinements, estimates of 500-mb height err no more than 10 geopotential decameters, which is sufficiently precise in most cases for analysis over ocean areas where aerological data are sparse.

I-21147
Peixoto, J.P., Rosen, R.D., Salstein, D.A., **Seasonal variability in the pole-to-pole modes of water vapor transport during the IGY,** *Archiv für Meteorologie, Geophysik und Bioklimatologie. Ser. A.* 1978 27(3/4), p.233-255, 9 refs.

Analyses of the global fields of moisture transport have been decomposed into their transient eddy, standing eddy and mean cell components for each of two semester seasons during the IGY. Maps of the vertically integrated transient eddy fluxes in both the zonal and meridional directions are presented. Further consideration is given to the zonally averaged fields of moisture transport by the different modes. In the zonal direction, the influence of the mean cellular mode is dominant. In the meridional direction, the transient eddies play a significant role in the seasonal water balance of mid-latitudes, whereas the mean meridional circulation is the determining mode in the tropics. Standing eddy contributions are generally small. Differences in the water vapor fluxes associated with each mode from one season to the next are depicted and related to baroclinic effects and monsoonal behavior where they occur. (Auth.)

I-21171
Noxon, J.F., **Stratospheric NO2 in the antarctic winter,** *Geophysical research letters.* Dec. 1978 5(12), p.1021-1022, 3 refs.

Shipboard measurements of stratospheric NO2 between 42 and 55 deg in the southern hemisphere during July 1978 show an abrupt change in the daytime abundance near 50S, similar to that seen in the northern winter hemisphere. The antarctic transition is the sharper,

possibly as a result of higher stability in stratospheric zonal flow. (Auth.)

I-21172

Bush, Y.A., **Stratospheric measurements of methane at several latitudes,** *Geophysical research letters,* Dec. 1978 5(12), p.1027-1029, 6 refs.

Samples of stratospheric air were obtained at altitudes up to about 35 km from balloon flights carried out at 4S (Brazil), 78S (Antarctica), and 41N (two flights, Wyoming) in 1978. Samples obtained were analyzed for methane using a gas chromatograph with flame ionization detection. The two Wyoming profiles and the Antarctica profile are similar. However, the Brazil profile, which is the first low-latitude stratospheric-methane profile reported, falls off much less rapidly with altitude, even when reduced to a common tropopause reference. The use of these methane profiles to deduce OH profiles is explored. (Auth.)

I-21186

Gribbin, J., ed, **Climatic change,** London, Cambridge University Press, 1978, 280p., Refs. For selected papers see 33-2294 through 33-2298 or F-21190, I-21187 through I-21189, and I-21191.

This volume contains fourteen contributions on the subject of climatic change, arranged under the following headings: studying the climates of the past, balancing the global heat budget, astronomical influences, modelling the changing climate, and climate and man. A paper by H. Flohn (1974; 30-2570 or I-16225), providing an overall model of the initiation of a glaciation, is contained in an appendix.

I-21187

Tarling, D.H., **Geological-geophysical framework of ice ages,** Climatic change, edited by J. Gribbin, London, Cambridge University Press, 1978, p.3-24, Refs. p.20-25.

DLC QC981.8.C5C55

This discussion identifies some of the characteristics of previous ice ages and evaluates the significance of various geological and geophysical factors that have influenced past climatic changes and may be responsible for current change. With the arguable exception of the Late Precambrian Ice Age(s), the most notable feature of all ice ages is that they only occur at high latitudes, mostly within 30 deg of the pole. Throughout the Mesozoic, the South Pole was close to Antarctica, but it was only after it became located inland that ice sheet formation commenced. The drift of the Gondwanan continent to the situation where the pole, by Middle Permian times, was merely on the edge of the land mass seems to coincide with the rapid, simultaneous disappearance of ice sheets throughout the Gondwanan continent, leaving only isolated mountain glaciers until the continent drifted sufficiently far back under the pole in Miocene times. It seems, therefore, that it is essential for the pole to lie well within a continental block before ice sheets can form, with shallow, epicontinental seas sufficiently near to provide a moisture supply.

I-21188

Duplessy, J.C., **Isotope studies,** Climatic change, edited by J. Gribbin, London, Cambridge University Press, 1978, p.46-67, 122 refs.

DLC QC981.8.C5C55

The application of oxygen isotopic analysis in benthic and pelagic foraminifera in deep sea cores is examined, with particular attention given to the factor controlling the isotopic composition of a given foraminifera specimen and to the assessment of which of these factors are likely to have changed in the past. The O-18 content of sea water is directly related to the extent of the continental ice volume; the larger the ice sheets formed on the continent, the heavier the isotopic composition of the sea water. The isotopic compositions of ice cores from Camp Century, Byrd Station, and the Vostok borehole, are examined. An upper limit of delta= -30 per mill has been estimated for the mean isotopic composition of continental excess ice during the latest glacial maximum. The isotopic balance between sea water and continental ice demonstrates that the increase of the mean 0-18/0-16 of ocean water during the last glacial period was at least 1.2 per mill, in line with the benthic foraminifera and ice cap evidence.

I-21189

Budyko, M.I., **Heat balance of the Earth,** Climatic changes, edited by J. Gribbin, London, Cambridge University Press, 1978, p.85-113, 48 refs.

DLC QC981.8.C5C55

This paper treats the heat balance of the Earth's surface, the Earth-atmosphere system and the atmosphere, as well as the water balance of the Earth. The effects of arctic and antarctic snow and ice cover on the albedo fo the Earth's surface and the Earth-atmosphere system are taken into account.

I-21191

Kellogg, W.W., **Global influences of mankind on the climate,** Climatic change, edited by J. Gribbin, London, Cambridge University Press, 1978, p.205-227, Refs. p.223-227.

DLC QC981.8.C5C55

Studies of the global influences of mankind on climate lead to the conclusion that barring a major natural perturbation to the climate, mankind's activities will in all likelihood warm the Earth in the next few decades. It is expected that the rate will be appreciably larger than any change of mean surface temperature seen in the past 100 yr. The greatest changes will probably take place in the polar regions. Four regimes of arctic and antarctic ice and snow are considered: winter snow cover on the land that melts in summer; floating sea ice or pack ice: mountain glaciers: and the ice sheets of Greenland and the Antarctic. It is considered unlikely that the polar ice masses will be greatly affected by anthropogenic warming in the next century or so.

I-21254

Rasmussen, R.A., Penkett, S.A., Prosser, N., **Measurement of carbon tetrafluoride in the atmosphere,** *Nature,* Feb. 15, 1979 277(5697), p.549-550, 3 refs.

The concentration of CF4 was determined in 21 analyses of 11 different ambient air samples representative of the environs around AERE Harwell, and three other air samples representing the South Pole, New Zealand, and the Pacific Northwest. The results of CF4 measurements for the samples are shown, as well as a representative analysis of CF4 and Xe-132 chromatographed from an enriched air sample from the South Pole. The mean CF4 concentration for 16 analyses of Harwell air is 63.6 per mill by volume. The mean of the other three air samples for five analyses is 64.4 p.p.b. by volume. No significant difference in CF4 concentrations in the Southern and Northern Hemispheres is indicated.

I-21268

Tarakanova, V.P., **Efficiency of the existing network of southern hemisphere polar aerological data-gathering stations and feasibility of improving it** [Ob informativnosti sushchestvuiushcheĭ seti stantsiĭ v poliarnykh raĭonakh iuzhnogo polushariia i vozmozhnostiakh ee povysheniia], *Leningrad. Glavnaia geofizicheskaia observatoriia. Trudy.* 1977 Vol.397, p.124-129, In Russian. 1 ref.

Theoretical error in optimal interpolation by using aerological data combined with mathematical forecasting and satellite data is discussed. Forecasting leads to a reduction of nearly 50% in the mean interpolation error over polar regions. Inclusion of satellite data over both sea and land has a similar impact on error, but the error distribution is different.

I-21275

Brasseur, G., **Long-term effect on the ozone layer of nitrogen oxides produced by thermonuclear explosions in the atmosphere,** *Annales de géophysique*, 1978 34(4), p.301-306, 22 refs.

The explosion of thermonuclear bombs in the atmosphere leads to the formation of nitrogen oxides. In order to try to derive any signifieant variations of total ozone related to the injection of the nitrogen oxides molecules during the nuclear test series of 1961 and 1962, an analysis of the ozone records is presented. The data provided by the Arosa station since 1932 and by the ozone world network since 1957 are considered. No long term ozone depletion can be found. However, if the bulges observed in the ozone records at low and high latitudes are statistically significant, they could be attributed to a chemical chain producing ozone in presence of HO2 and NO. Data were gathered at stations all over the world, including Halley Bay, Amundsen and Byrd Stations. (Auth. mod.)

I-21290

Kolbig, J., Warmbt, W., **Measurements of surface ozone at Mirnyy, Antarctica** [Messungen des bodennahen Ozons in Mirny—Antarktika], *Zeitschrift für Meteorologie*, 1978 28(5), p.274-277, In German with English summary. 11 refs.

Daily measurements of the surface ozone were made at Mirnyy Station from Feb. 1960 to Jan. 1962 at 8,12,16,20, 24 hours local standard time using the iodometric method by Cauer. The results are in good agreement with the data of other stations in Antarctica discussed by Oltmans and Komhyr (see I-17491). This particularly concerns the average surface ozone concentration, the annual variation with its maximum in winter and its minimum in summer, the absence of significant diurnal variations, and the interdiurnal variations of ozone, which are more pronounced in summer than in winter. The annual variation of the cyelonic activity in the subpolar latitudes is of major influence upon the amount and the time-related variations of the surface ozone. The meridional circulation patterns in the lower troposphere are the predominant mechanisms responsible for the transport of ozone into the near-ground layer of the atmosphere over the Antarctic continent. (Auth.)

I-21314

Tucker, G.B., **Observed zonal wind cycle in the southern hemisphere stratosphere,** *Royal Meteorological Society. Quarterly journal*, Jan. 1979 105(443), p.263-273, 10 refs.

Zonal winds in the stratosphere for a period of 20 years have been analysed at nine stations including Macquarie I. and Casey, between 7S and 66S centered on the longitude of eastern Australia. The amplitude, period and phase of the third (quasi-biennial cycle are determined. Although a coherent pattern emerges in the variation of period with latitude and height, it is concluded that, at least in the tropics, the representative period is 832 days. The well-known maximum in amplitude of this cycle in the tropics decreases to a minimum at about 30S but increases again polewards, reaching a maximum at about 50S at the highest levels of observation (6mb). The phase of the cycle 'leads' at high levels and low latitudes and also at the height and latitude of the polar night jet. Below these maxima there is a downward propagation of the cycle but little phase variation with height exists in middle latitudes. (Auth. mod.)

I-21341

Chukanin, K.I., **Some characteristics of atmospheric circulation and meteorological conditions in the Northern and Southern Hemispheres,** *Polar geography*, Oct.-Dec. 1978 2(4), p.263-269, 14 refs. For Russian original see I-18424.

Differences in atmospheric processes between the Northern and Southern Hemispheres are most pronounced in the middle and high latitudes. These differences are evident in the mean latitudinal values of air pressure and temperature, in the characteristics of the annual march of horizontal temperature contrasts between high and low latitudes, in the air-pressure magnitudes of pressure systems, and in the location of the two hemispheres. Possible causes for these differences are suggested. (Auth.)

I-21377

Lettau, H.H., **Climatonomical modeling of temperature response to dust contamination of antarctic snow surfaces,** *Boundary-layer meteorology*, 1977 No.12, p.213-229, 10 refs.

Monthly averages of the surface energy balance are parameterized, resulting in a reduced solar forcing function and a nondimensional time scale for computing the thermal response at the air-snow interface by numerical forward integration. The climatonomic transform of the balance equation assesses surface-temperature perturbations resulting from parameter modifications that simulate effects of dust contamination of a snow surface. Three climatonomical model experiments permit these conclusions: 1) an albedo reduction increases primarily the summer temperatures; 2) an emissivity decrease raises the temperature of all months nearly uniformly; and 3) the thermally induced feedback on submedium structure (if summer melting is instigated) increases the storage capacity and reduces spring and summer temperatures with compensating rise in autumn and winter temperature. Quantitative results are exemplified by assumed modification of conditions that exist at the South Polar Plateau. (Auth.)

I-21385

Mercer, J.H., **Glacial development and temperature trends in the Antarctic and in South America,** Antarctic glacial history and world palaeoenvironments, ed. by E.M. van Zinderen Bakker, Rotterdam, A.A. Balkema, 1978, p.73-93, Proceedings of a symposium held by the Scientific Committee on Antarctic Research during the 10th INQUA Congress at Birmingham, United Kingdom, August 1977. Refs. p.90-93.

Reviewing current thinking about glacial development and temperature trends in Antarctica and South America, the author discusses the probable situation, its causes and effects for three periods: from the end of the Paleocene to Late Miocene; from Late Miocene to Early Pliocene; and from the beginning of the Gauss magnetic epoch to the present. He considers the evidence from oxygen isotope studies, ice rafting studies, subglacial volcanism, studies of marine micro- and macrofauna, paleobotany, geology, oceanographic and core analysis results, and geomagnetic work.

I-21405

Peterson, J.T., ed, **Geophysical monitoring for climatic change, No.6. Summary report 1977,** Boulder, Colorado, U.S. National Oceanic and Atmospheric Administration, Dec. 1978, 145p., Refs. p.138-144.

Measurements of important atmospheric trace constituents at the four U.S. global baseline observatories, including Amundsen-Scott Station, and the research associated with such measurements in 1977 are summarized. The new Clear Air Facilities and methods used for obtaining data are briefly described. The scientific program included the following parameters: carbon dioxide, surface ozone, total ozone, halocarbons, aerosols, solar radiation and meteorology.

I-21455
Savitskiĭ, G.B., **Using macrocirculation to produce experimental three-day weather and pressure field forecasts for Antarctica** [Ispol'zovanie priemov makrotsirkuliatsionnogo metoda dlia sostavleniia opytnykh trekhsutochnykh prognozov polia davleniia i pogody po Antarktike], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1978 Vol.69, p.49-58, In Russian. 14 refs.

A number of prognostic relationships among elementary synoptic processes were defined by investigations of thermobaric structure and dynamics in the troposphere, of the connection between antarctic weather and jet streams, and of several solar relationships, e.g. the effect of the 27-day solar activity cycle on atmospheric pressure changes. It is apparent that the interconnections under study can be used to predict synoptic developments for the next 2-3 days. Three-day weather forecasts were made for several antarctic areas and their validity was checked.

I-21456
Savitskiĭ, G.B., Lessing, V.M., **Tropospheric jet streams in Antarctica** [Troposfernye struĭnye techeniia v Antarktike], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1978 Vol.69, p.59-62, In Russian. 2 refs.

Southern hemisphere tropospheric jet streams were analyzed; data on incidence by month, on location, direction and position of cyclonic configurations in relation to jet stream axis are presented. Jet streams in the free antarctic atmosphere can serve as indicators for weather forecasting.

I-21467
Joint U.S. Polex Panel, **U.S. contribution to the Polar Experiment (POLEX). Part 1. POLEX-GARP (North). Part 2. POLEX-GARP (South),** Washington, D.C., 1974, 173p.

This publication reviews the national research effort in both polar regions to determine the physical basis for climates; defines the national contribution to polar research; explores the means for international collaboration; and continues review of the scientific merits of the Arctic Ice Dynamics Joint Experiment (AIDJEX). Both parts outline general and specific recommendations, background information and considerations affecting the U.S. contribution, a summary of program elements, and a time schedule for execution of the program. In addition, Part 1 contains appendices A through F which are devoted to the following respective topics: meteorological observations in support of weather forecasting, processes at and above the ice, heat balance of the polar oceans, numerical modeling experiments, climate record, and abbreviations. (Auth.)

I-21481
Rasmussen, R.A., Pierotti, D., **Global and regional N20 measurements,** *Pure and applied geophysics,* 1978 116(2/3), p.405-413, 15 refs.

Real-time nitrous oxide measurements have been made *in situ* at the South Pole, north and south of the equator from on board the *Alpha Helix* and over the Pacific Ocean on several aircraft flights from the U.S. to New Zealand, Australia and 90S. In addition, an automated EC-GC has been operated for the past year intermittently monitoring nitrous oxide in surface air at a rural site in the wheatlands of eastern Washington state. The data obtained are consistent and in agreement with the data obtained from the analyses of a large number of samples collected both from ground stations and a variety of aircraft flights made in the southern and northern hemisphere. The observed global data show no interhemispheric differences. The present concentration of nitrous oxide in the troposphere is measured to be 330 ppbv. Its vertical distribution in the troposphere is very uniform. A small decrease (2-3 percent) across the tropopause is characteristically observed in the altitude Learjet flights.

I-21482
Dütsch, H.U., **Vertical ozone distribution on a global scale,** *Pure and applied geophysics,* 1978 116(2/3), p.511-529, 11 refs.

All available data of the vertical ozone distribution measured with chemical sondes have been assembled and combined with one year's results from the BUV satellite to obtain the best possible information on the vertical ozone distribution averaged over longitude as a function of season (month by month). For the southern hemisphere Umkehr data have been used as a guideline in the necessary smoothing procedure. Especially in the northern hemisphere considerable adaptation to the observed latitudinal mean of the total amount was needed because most sounding stations are situated in upper air trough positions. The results are presented as vertical distributions, as meridional cross sections of partial pressure and of mixing ratio and as partial pressure isolines as a function of latitude and season at different levels. The interaction between photochemical processes and transport responsible for the observed distribution is briefly discussed. Data were gathered among others, at Showa, Amundsen-Scott, Halley Bay, Byrd, Argentine and Macquarie Islands. (Auth. mod.)

I-21493
Kuhn, M., **Light transmission and its modification by the inversion and general circulation of the antarctic atmosphere,** June 30, 1973, 69p., Unpublished ms. Final report to the National Science Foundation. Refs. p.66-69.

Extinction of direct solar radiation was measured at Plateau Station in three summers, 1966-1969. Given the respective amount of Rayleigh scattering, carbon dioxide absorption and the spectral distribution of ozone and water absorption, the records were analyzed for total atmospheric ozone content, precipitable water, aerosol extinction and its spectral variation. This analysis was based on the assumption of a background aerosol having a power size spectrum, except in the first of the three years when there was a disturbance by volcanic ashes remaining from the Agung eruption. The seasonal variation of the optically active atmospheric constituents was interpreted in terms of local and large scale circulation. The seasonal behavior or turbidity parameters is best explained by particle transport predominantly downward from the 50-mb level, with increasing low level influence in December. The concept of aerosol influx in the upper troposphere and lower stratosphere was checked by comparing turbidity values of coastal and additional inland stations. The role of the inversion is restricted to controlling condensation (particle washout) and to suppressing daily variations in turbidity. (Auth. mod.)

I-21608
Franceschini, G.A., **Solar radiation over the Weddell and Ross Seas,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.172-173, 4 refs.

The results of measurements made of total irradiance and photosynthetically active radiation (PAR) over the Weddell and Ross Seas are summarized. The program in the Ross Sea also included a special experiment to quantify the enhancement of irradiance, total and PAP, by reflection from shelf ice and sea ice.

I-21609
Ohtake, T., **Atmospheric ice crystals at the South Pole in summer,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.174-175, 6 refs.

The formation mechanisms of atmospheric ice crystals at the South Pole have been studied. The ice crystals formed in three different layers. High clouds (cirrus or cirrostratus) formed 1 mm or larger assembled-bullet ice crystals. Middle clouds (altostratus or al-

tocumulus) created combined ice crystals in the form of side planes, bullets, and columns about 1 mm in size. Ice crystals from both high and middle clouds form and grown in the clouds, then fall out over long distances. The lowest 1,000 m, without visible cloud layer, but sometimes accompanied by fractostratus clouds, created ice crystals in the form of thin hexagonal plates and columns smaller than 0.2 mm. This last kind of ice crystal is the most complicated and forms by water vapor deposition directly onto nuclei under sub-ice saturation conditions. The stepped column ice crystals at South Pole station may result from the freezing of low-level stratus cloud droplets.

I-21610

Schwerdtfeger, W., Komro, F., **Early winter storms in the northwestern Weddell Sea,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.175-177, 5 refs.

On Feb. 26, 1975, the Argentine vessel *General San Martin* was beset in a cold southerly windstorm of 40 to 50 knots in the region south of the Antarctic Sound. The pressure exerted by the ice broke some reinforcements in the ship's body and at times lifted the entire vessel. It took 4 weeks, a change of weather, and extremely difficult manueuvering before the Argentine ship could free itself. Weather developments during the last 5 days of Feb. 1979 are summarized, using reports made every 6 hr, satellite pictures, and twice daily synoptic maps. Two features of the synoptic situation in the area observed can be identified which, if appearing concurrently, would warrant a 24-hr forecast of an imminent southerly storm in the northwestern Weddell Sea, and the corresponding advance of the sea ice. These features are described.

I-21611

Kuhn, M., Siogas, L., **Spectroscopic studies at McMurdo, South Pole, and Siple stations during the austral summer 1977-78,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.178-179, 4 refs.

This project concentrated on the radiative properties of different types of surfaces. Measurements were made of spectral albedo, anisotropic reflectance, and spectral extinction in snow and ice. Typical spectra are shown for albedo measurements taken at McMurdo, South Pole, and Siple stations, and at Canada Glacier of fresh water ice, sea ice, and aged and fresh snow.

I-21612

Neff, W.D., **Boundary layer research at South Pole Station using acoustic remote sensing,** *Antarctic journal of the United States.* Oct. 1978 13(4), p.179-181, 6 refs.

This article reports on an analysis of acoustic sounder data obtained during 1977 and on a series of tests planned for a wind-sensing Doppler-acoustic sounder and sonic anemometer installed during Jan. 1978 at South Pole station. The 1977 experiment focused on the profiling of small-scale turbulent velocity and temperature fluctuations as a means of monitoring the structure and evolution of the atmospheric boundary layer at the South Pole.

I-21613

Lysakov, E.P., **Possible mechanism of meridional atmospheric circulation over Antarctica,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.181-183.

These investigations focused on air circulation mechanisms. The program included studies of: vertical motions in the atmosphere and related air mass distribution over Antarctica; mechanism of meridional air transport over the antarctic coastal zone; interpretation of certain atmospheric circulation features by means of an air mass distribution model for the antarctic continent; relationship of a mechanism of meridional circulation over Antarctica with the model of air mass transport over the Southern Hemisphere; and long term climatic evidence and current observational data. Data were collected for all the stations of the mainland together with Macquarie and Campbell Is. and Australia.

I-21614

Salinas, M.G., **Operational meteorology, *Deep Freeze* 78,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.183-184.

The Naval Support Force Antarctica (NSFA) meteorology officer serves as the manager of the U.S. meteorological observation program in the Antarctic and provides environmental support for all U.S. air, surface, and ship operations and some support to other non-U.S. users. Forecast services are also provided. McMurdo Station is the program's main center of operation. Other permanent meteorological reporting stations are maintained at South Pole, Siple, and Palmer. Surface synoptic observations are also carried out at a number of temporary austral summer camps and stations. Weather conditions during *Deep Freeze* 78 are described.

I-21615

Hofmann, D.J., **Trace gas and aerosol measurements to 30 km in Antarctica,** *Antarctic journal of the United States,* Oct. 1978 13(4), 185-186, 4 refs.

Balloon measurements of the stratospheric constituents nitrous oxide (N2O), chlorofluorocarbons (CF2Cl2 and CFCl3), aerosol particles, and condensation nuclei are reported and compared with measurements taken in 1977. High altitude variability occurred in the profiles of N20 and the chlorofluorocarbons. The aerosol profiles taken in 1977 and 1978 were quite similar, except for less layering in the lower stratosphere in 1978. This probably indicates a lack of recent volcanic activity in 1978. High tropospheric concentrations of condensation nuclei were evident in both the 1977 and 1978 profiles.

I-21616

Zoller, W.H., Cunningham, W.C., McGregor, C., Duce, R.A., **Trace elements in the antarctic atmosphere,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.187-188, 6 refs.

The project described in this article is designed to ascertain the composition of antarctic aerosols and to determine their source. The results will be used to evaluate the relationship of atmospheric aerosol burdens and the composition of snow. Efforts at South Pole Station are concentrating on the collection of particle samples for trace metal analysis and on both particulate and gaseous halogen samples. Radon-222 measurements are also being made daily. The results of chemical analysis of snow samples from the surface and from a 5-m pit will be compared with the atmospheric concentrations of elements measured. A plot of the chemical compositions of the atmosphere and snow from earlier measurements shows agreement within a factor of 3 or 4 for 13 elements determined. These results may indicate that the concentrations of these elements in snow are closely related to atmospheric burdens. Samples of ice were also collected from the summit of Mt. Erebus for analysis of halogens and other trace species.

I-21617

Mason, A.S., Ostlund, H.G., **Antarctic tritium measurements,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.188-190, 3 refs.

Atmospheric sampling of tritium gas (HT) and tritiated water vapor (HTO) in the Antarctic from aircraft is reported. The design and operation of the sampler is illustrated and discussed, and the results are analyzed. The HT data show a generally well-mixed condition. Comparable results have been reported in the mid-latitudes of the Northern Hemisphere.

I-21618
Herbert, G.A., Halter, B.C., **Geophysical monitoring for climatic change at the South Pole, 1977,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.190-191, 4 refs.

The National Oceanic and Atmospheric Administration's Air Resources Labs. operate four stations with the objective of measuring climatologically important atmospheric constituents at locations far removed from significant anthropogenic activity. During 1977, the following parameters were continuously monitored under the program: carbon dioxide, surface ozone, aerosols, solar radiation, wind direction and speed, air and snow temperature, total ozone, halocarbons, and turbidity.

I-21619
Rasmussen, R.A., **Halocarbon and N2O analyses in Antarctica,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.191-193, 4 refs.

This research is organized to measure systematically the year to year change in the concentration of F-11, F-12, CH3CCl3, CCl4, and N2O in the atmosphere of Antarctica and compare the values with representative Northern Hemisphere midlatitude values. In Jan. 1978 a study was begun in which the fluorocarbon F-11 levels in samples of antarctic air were compared with F-11 measurements made at Cape Grim in Tasmania by P. Fraser. Results from 1975 to 1978 fieldwork have shown a steady increase in the atmospheric concentrations of the halocarbons in Antarctica. Similar values were obtained for F-11 measurements at Cape Grim and over Antarctica. Similar trends and changes in the growth rate and interhemispheric ratio of F-12, methyl chloroform, and carbon tetrachloride were also observed. The 1977-78 data for F-11 showed an increase of only 8% in the Northern Hemisphere vs a 14% increase in the Southern Hemisphere. The 1978 N2O data do not reflect any interhemispheric differences.

I-21620
Dreschhoff, G., Zeller, E., **Gamma ray activity from radioactive fallout at the South Pole,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.193-194, 4 refs.

Significant variations in the gamma ray activity at specific levels below the surface were detected in a 4-m-deep pit on the Ross Ice Shelf at Williams Field and in a 5-m-deep pit in Marie Byrd Land. A much more successful test conducted in a 10-m-deep glaciological pit near South Pole Station revealed three individual zones of fallout concentration at depths of 1.4 m, 3.1 m, and 4.4 m. The increased gamma ray activity at these levels is very distinct and amounts to a 5 to 10% increase over the level of the background radiation. Beta activity peaks have been found at the same three locations by laboratory measurements. Each fallout zone can be correlated with a nuclear weapons test series.

I-21621
Shaw, G.E., **Particles in the air at the South Pole,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.194-196, 3 refs.

The sources and physical properties of particles suspended in the air at South Pole station were studied by performing inversions on measured optical extinction and scattering data. The aerosol size spectrum tended to be bimodal, consisting of an Aitken mode which dominates the number concentration, and a large-particle mode, which dominates the mass concentration. Calculations have been made on the dynamical behavior of particulates that coagulate together under the action of Brownian motion. Observations are consistent with the hypothesis that the source of the large aerosol particles over the plateau is primarily oceanic. Nevertheless, there are problems in understanding how salts from the oceans penetrate inland for 2,000 km and how they are carried to the South Pole. The optical properties of antarctic aerosols are described.

I-21622
Bromwich, D.H., **Some considerations in deriving poleward water vapor transport values for coastal East Antarctica,** *Antarctic journal of the United States.* Oct. 1978 13(4), p.196-197, 4 refs.

In a study designed to provide information on seasonal and annual snowfall amounts for coastal East Antarctica, precipitation is derived as a residual from the water vapor conservation equation for the atmospheric volume overlying the region concerned. The other dominant component in the budget calculation is the convergence of integrated water vapor transport, with net evaporation from the underlying surface and changes in water vapor storage making only a small contribution. Meridional (in the north-south direction) transport convergence is nearly proportional to the net amount of water substance carried across the continental periphery. Convergence in the east-west or zonal direction is presumed to be negligible. Considerations that could result in serious errors in the data are discussed.

I-21660
Warburton, J.A., ed, **Report of polar meteorology workshop, Reno, Nevada, 1975,** *Nevada. University. Desert Research Institute. Technical report.,* [1976] Ser. P, No.18, 117p., Numerous refs. passim. For selected papers see F-21672, I-21661 through I-21663, I-21665 through I-21671, I-21673, and K-21664, or 33-3386.

DLC GB611.N4

This report contains the formal papers presented at the Polar Meteorology Workshop, held in Reno, Nevada, 6-8 May 1975. The discussion and planning which occurred at the workshop are presented under four principal headings: Climatology and Synoptic Meteorology; The Chemistry of Atmospheric Particulates and Gases and Their Roles in Precipitation Processes; Energy Transfer and Atmospheric Structure; and Facilities and Techniques. The three day workshop was attended by 46 scientists engaged in meteorological research in both north and south polar regions. Critieal issues were identified, as were new areas of research need. Recommendations for future research in polar areas are presented, together with explanations and justifications for the provision of specific facilities for the conduct of this research in the Arctic and Antarctic. (Auth.)

I-21661
Callahan, W.S., **Review of the NOAA (NWS) meteorological program in the Antarctic,** *Nevada. University. Desert Research Institute. Technical report,* [1976] Ser. P. No.18, Report on polar meteorology workshop, Reno, Nevada, 1975, edited by J.A. Warburton, p.46-47, 4 refs.

DLC GB611.N4

The activities of the National Weather Service include the maintenance of personnel at Amundsen-Scott Station and McMurdo. These stations provide the only reliable data points in their important areas of the Antarctic and the data gathered there are used for a wide variety of research and operational activities. The types of observations made and the uses to which they are put, both by the antarctic support effort and by other groups, are discussed.

I-21662
Carroll, J.J., Coulson, K.L., Fitch, B., Hamilton, R., **Surface energy balance measurements at the South Pole,** *Nevada. University. Desert Research Institute. Technical report,* [1976] Ser. P, No.18, Report on polar meteorology workshop, Reno, Nevada, 1975, edited by J.A. Warburton, p.48-49.

DLC GB611.N4

The authors outline a program to measure the various components of the polar energy balance in order to shed light on the role of

polar heat sinks. Energy balance equations for near-surface air and for the snow layer are given to indicate what data will be gathered. They will be analyzed initially to examine the relative roles of each term as a function of the local current weather and sounding characteristics. What they expect to find, for example, are the correlations between cloud cover, advections and the heat fluxes at time scales of 0.5 to 3 days. If such correlations are found, then an attempt will be made to trace the source of the air mass involved using satellite data.

I-21663

Cobb, W.E., **Atmospheric electric measurements at the South Pole,** *Nevada. University. Desert Research Institute. Technical report,* [1976] Ser. P, No.18, Report on polar meteorology workshop, Reno, Nevada, 1975, edited by J.A. Warburton, p.50-51.

DLC GB611.N4

The major objectives of the South Pole Atmospheric Electric Program are twofold: first, to establish an environmental benchmark of the atmospheric electric climate on the polar plateau and secondly, to investigate those processes which control and maintain the flow of electrical current between the earth and the ionosphere, the so-called global circuit. Each objective is briefly discussed.

I-21665

Duce, R.A., Zoller, W.H., **Iodine, bromine and chlorine in the antarctic atmosphere,** *Nevada. University. Desert Research Institute. Technical report,* [1976] Ser. P, No.18, Report on polar meteorology workshop, Reno, Nevada, 1975 edited by J.A. Warburton, p.54-56, 7 refs.

DLC GB611.N4

The objectives of this investigation are to study the atmospheric distribution of the halogens—iodine, bromine and chlorine at a near coastal site and a site well inland on the polar plateau and to obtain information on the relative residence times of the various halogens in the gas and particulate phases by observing variations of the interhalogen ratios and gas/particulate ratios from marine air of coastal Antarctica and air from the polar plateau. Mean gaseous and particulate halogen concentrations and interhalogen ratios are presented in tables along with similar data from a mid-ocean location, Hawaii. Variations of the gaseous to particulate Br and gaseous to particulate iodine concentration ratios with collection location are also tabulated. Virtually constant gaseous I and Br concentrations emphasize the point that gaseous I and Br removal from the atmosphere over the polar ice cap is minimal.

I-21666

Hall, F.F., Jr., Owens, E.J., **Atmospheric acoustic echo sounding investigations at the South Pole,** *Nevada. University. Desert Research Institute. Technical report,* [1976] Ser. P, No.18, Report on polar meteorology workshop, Reno, Nevada, 1975., p.57-59, 4 refs.

DLC GB611.N4

The objective of this investigation is to monitor the structure of the planetary boundary layer at the South Pole using a monostatic acoustic echo sounder. The typical facsimile recording of acoustic echo intensity has been categorized as the herringbone pattern, showing rather closely spaced, descending turbulent layers. Investigations with sounders have shown that the depth of the herringbone patterns correlates closely with the depth of the most intense portion of the surface based temperature inversion. Surprisingly during 11 hours of the 431 for which records are available, convective plumes originating at the ice surface were detected by the sounder, or for 2.6% of the time. Another class of transient event detected by the sounder consisted of abrupt spikes in the turbulent return rising from the surface-based inversion to heights of 200 m or more.

I-21667

Hofmann, D.J., Rosen, J.M., **Balloon sounding the stratospheric sulfate aerosol layer,** *Nevada. University. Desert Research Institute. Technical report,* [1976] Ser. P, No.18, Report on polar meteorology workshop, Reno, Nevada, 1975 edited by J.A. Warburton, p.60-62.

DLC GB611.N4

Since 1971 the authors have conducted 78 measurements of the stratospheric aerosol layer using a balloon-borne optical counter from a number of stations ranging in latitude from 85N to 90S. The goals have been to determine the global morphology of the submicron particle layer in the stratosphere in order to determine natural backgrounds, sources and sinks. A cross section in presented, showing four vertical aerosol concentration distributions measured a year apart from South Pole Station. Under quiescent conditions the southern hemisphere stratospheric aerosol loading is very similar to that observed in the north. Prior to late 1974 a slow time decay was observed globally. A large intrusion of aerosol particles in late 1974 in the northern hemisphere (presumably of Guatemalan volcanic origin) may have reached the antarctic continent by January 1975. Missing from this study are measurements in the south polar regions for seasons other than summer; this omission will be remedied by the planned winter soundings in 1975.

I-21668

Hogan, A., **Antarctic aerosols,** *Nevada. University. Desert Research Institute. Technical report,* [1976] Ser. P, No.18, Report on polar meteorology workshop, Reno, Nevada, 1975., p.63-65.

The author briefly reviews the literature on antarctic aerosols and ventures a short description of them as they are currently understood. Suggestions for needed studies are offered.

I-21669

McGinnis, L.D., **Meteorological constraints on hydrology studies in the dry valleys, Antarctica,** *Nevada. University. Desert Research Institute. Technical report,* [1976] Ser. P, No.18, Report on polar meteorology workship, Reno, Nevada, 1975, edited by J.A. Warburton, p.68-71, 7 refs.

DLC GB611.N4

Quantitative physical, chemical and biological programs currently underway in the dry valleys of Antarctica in conjunction with the DVDP are hampered by a lack of precise meteorological measurements. This paper describes hydrology studies in the dry valleys and indicates atmospheric input required before an interpretive study involving model construction can be introduced.

I-21670

Shaw, G.E., **Polar aerosol-climatic implications,** *Nevada. University. Desert Research Institute. Technical report,* [1976] Ser. P, No.18, Report on polar meteorology workshop, Reno, Nevada, 1975, edited, by J.A. Warburton, p.94-98, 5 refs.

DLC GB611.N4

During austral summer 1974-75 the author used newly developed techniques to experimentally derive certain aerosol parameters in the Antarctic. The program consisted of detailed measurements of the direct component of ground-level solar flux at multiple wave-lengths, and similar measurements of the diffuse sky intensity again at multiple wavelengths but also at various sighting directions. Air turbidity was considerably smaller than had been expected. The extremely clean atmosphere is apparently typical of intervolcanic periods. There were periods of clear-air ice crystal precipitation: these events seemed to be distinct, identifiable and of short duration. Observed sky radi-

ance and scattering data are presented in graphs. The studies tentatively indicate that aerosols over central Antarctica cause a net heating of the earth's atmosphere system on the order of perhaps 0.1C.

I-21671

Smiley, V.N., Warburton, J.A., **Lidar and replicator measurements of ice crystal precipitation at South Pole,** *Nevada. University. Desert Research Institute. Technical report,* [1976] Ser. P, No.18, Report on polar meteorology workshop, Reno, Nevada, 1975, edited by J.A. Warburton, p.100-103.

DLC GB611.N4

A dye laser lidar built by the Desert Research Institute which provides vertical profiles of ice crystal precipitation and growth layers and an ice crystal replicator have been successfully placed in operation at New South Pole Station. It has been interfaced with a new HP2100 S computer and data were successfully gathered during both winter and summer. The objectives of the present program are to determine where ice crystals are formed in the atmosphere and to study crystal sizes, habits and indications of concentration with the replicator.

I-21673

Zoller, W.H., Duce, R.A., **Atmospheric concentrations and sources of trace metals at the South Pole,** *Nevada. University. Desert Research Institute. Technical report,* [1976] Ser. P, No.18, Report on polar meteorology workshop, Reno, Nevada, 1975, edited by J.A. Warburton, p.110-113, 5 refs.

DLC GB611.N4

In October 1970 extensive atmospheric sampling was begun at South Pole Station. The average trace element concentrations and concentration ranges for the ten sampling periods are presented in a table. There are two major obvious natural sources for trace elements —crustal weathering and the sea. The contribution of marine salt and crustal elements to trace elements is calculated. Suggestions for further research are offered.

I-21691

Voskresenskiĭ, A.I., **State of the art and future prospects for antarctic meteorological research** [Sostoianie i perspektivy meteorologicheskikh issledovaniĭ v Antarktike], *Antarktika; doklady komissii,* 1978 No.17, p.51-74, In Russian. 28 refs.

Soviet meteorological research over the past 20 years is reviewed. Most recent results are dealt with in greatest detail. Equipment used for meteorological observations at Soviet stations is discussed and the role of the regional meteorological center at Molodezhnaya described. A fairly full account of conclusions about atmospheric circulation and heat balance aspects of the continent's role as a heat sink is included. The plans for further research and the POLEX project are outlined.

See also:
A-19485 A-20240 A-20983 A-21358 B-19379 B-19552 B-20038 B-20040 B-20041 B-20273 B-20835 B-20895 B-20910 B-20915 B-21228 B-21448 B-21516 B-21602 C-19501 C-19502 C-19504 C-19505 C-21393 E-19259 E-19281 E-19282 E-19372 E-19423 E-19476 E-19663 E-19665 E-19874 E-19972 E-20008 E-20376 E-20552 E-20563 E-20565 E-20569 E-20631 E-20754 E-20757 E-20860 E-20902 E-20905 E-21005 E-21093 E-21180 E-21195 E-21571 E-21575 F-19285 F-19569 F-19584 F-19678 F-19680 F-19703 F-19706 F-19788 F-19819 F-19820 F-19824 F-19827 F-19830 F-19832 F-19838 F-19840 F-19863 F-19878 F-19880 F-19915 F-19973 F-20045 F-20046 F-20077 F-20083 F-20111 F-20112 F-20113 F-20115 F-20116 F-20117 F-20119 F-20120 F-20121 F-20124 F-20126 F-20127 F-20128 F-20129 F-20130 F-20247 F-20307 F-20393 F-20448 F-20450 F-20458 F-20459 F-20471 F-20478 F-20484 F-20488 F-20489 F-20505 F-20572 F-20615 F-20673 F-20734 F-20806 F-20824 F-20845 F-20865 F-20882 F-20889 F-21066 F-21132 F-21190 F-21255 F-21262 F-21280 F-21282 F-21392 F-21404 F-21407 F-21532 F-21539 F-21715 G-19757 G-19759 G-20208 G-20620 G-20904 H-19266 H-19301 H-21046 H-21047 J-19261 J-19630 J-19638 J-19781 J-19812 J-19914 J-19942 J-20022 J-20026 J-20532 J-20634 J-20645 J-20676 J-20706 J-20707 J-20708 J-21170 J-21362 J-21480 J-21546 J-21568 K-19480 K-21133 K-21631 K-21694 L-19572 L-20684

J. OCEANOGRAPHY

J-19257
Burns, D.A., **Major features of oceanographic development of the southeast Indian and southwest Pacific Oceans interpreted from microfossil evidence,** *Marine geology,* Oct. 1977 25(1/3), p.35-59, 24 refs.

The relative proportions of the main microfossil groups (diatoms, nannofossils, foraminifera, silicoflagellates and radiolaria) in the uppermost undisturbed Pleistocene sediments at selected sites drilled by the *Glomar Challenger* in the southeast Indian Ocean (Leg 28) and southwest Pacific Ocean (Legs 21 and 29) are demonstrated. By relating these to the present-day water mass overlying each site, the faunal microfossil expression of the sediments forming beneath different types of water is recognized. The relative proportions of the same mierofossil groups are plotted for the complete section drilled at these same sites. By comparing these diagnostic sedimented faunas with older faunas at each site, oceanographic reconstructions for the major features in the developments of the southeast Indian Ocean and southwest Pacific circulations are presented for the period from the Paleocene to the Pleistocene. (Auth.)

J-19261
Margolis, S.V., Kroopnick, P.M., Goodney, D.E., **Cenozoic and Late Mesozoic paleoceanographic and paleoglacial history recorded in circum-Antarctic deep-sea sediments,** *Marine geology,* Oct. 1977 25(1/3), p.131-147, 33 refs.

Sedimentological and isotopic studies of cores collected by the *Glomar Challenger* and the *Eltanin* from the circum-Antarctic region have revealed a chronology of paleoceanographic changes in the Southern Ocean and the paleoglacial history of Antarctica for the past 80 m.y. Oxygen and carbon isotopic compositions of planktonic and benthonic foraminifera and calcareous nannofossils contained in deep-sea sediment cores record paleoceanographic changes in oceanic surface and bottom waters. These data can be interpreted in terms of paleotemperatures, growth of the polar ice-caps and changes in oceanic circulation. Composite high- and low-latitude time-series plots of both oxygen and carbon isotopic data obtained from Cenozoic and Late Mesozoic calcareous micro- and nannofossils are considered in the light of existing knowledge of antarctic glacial chronology. (Auth. mod.)

J-19270
Kolpack, R.L., **Oceanography and sedimentology of Drake Passage, Antarctica,** Los Angeles, University of Southern California, 1968, 232p., University Microfilms order No.69-6497, Ph.D. thesis. Refs. p.151-157.

Surficial sediment distribution is influenced by surface and bottom water currents and temperature as well as the meridional circulation along the Antarctic Convergence in Drake Passage. Abundant calcareous planktonic foraminifera and nannoplankton are restricted to the area north of the Convergence zone. Eastward flowing bottom currents with a velocity of as high as 30-50 cm/sec in this north-central sector have eroded and winnowed the sediments. The dominant sedimentary processes in Drake Passage are ice-rafting, biogenic deposition, bottom current transportation and authigenic precipitation of manganese nodules and encrustations. Comparison of the physical and chemical oceanographic parameters with surficial sediment properties indicates that the sediments in Drake Passage reflect average long-term oceanographic conditions in the area.

J-19274
Constans, R.E., **Study of fluctuations in the carbonate compensation depth in the Southern Ocean south of Australia using calcareous nannofossils,** Tallahassee, Florida State University, June 1975, 172p., Master's thesis. Refs. p.144-156.

The calcareous nannofossil flora of fifteen piston cores collected from the Southern Ocean south of Australia is studied. These cores were recovered from the tops and flanks of seamounts and topographic highs which rise above the present CCD. A biostratigraphic zonation of the nannofossils assemblages present in this study material is determined. An analysis of the carbonate/non-carbonate sediment sequences present in the cores of this study shows that significant fluctuations in the CCD occurred in the area south of Australia during the Tertiary. During the lower Pliocene, the CCD stood at a level of approximately 3,600 meters water depth and 3.0 m.y.B.P. began a marked descent. By the uppermost Pliocene, the CCD had dropped to its present level in the vicinity of 4,600 meters. Changes through time in the position of the CCD of low latitude areas, as shown by other workers, and of high latitude areas, as shown by this study, differ significantly. (Auth. mod.)

J-19318
Nowlin, W.D., Jr., Whitworth, T., III, **Structure and transport of the Antarctic Circumpolar Current at Drake Passage from short-term measurements,** *Journal of physical oceanography,* Nov. 1977 7(6), p.788-802, 9 refs.

Three-week average speeds from an array of current meter moorings which spanned Drake Passage were used in conjunction with geophysic calculations to estimate the short-term transport of the Antarctic Circumpolar Current. Closely spaced hydrographic stations show that the current consists of three vertically coherent bands of relatively high speed within the generally eastward flow. These bands separate four water mass regimes which have distinct T-S relationships at depths above the core of the Circumpolar Deep Water. The geostrophic transport relative to 3000 db averaged 95 million cu m/s for five transects of the Passage and is consistent with previous measurements. Referencing the geostrophic transport to the current meter measurements given an adjusted transport of 124 million cu m/s to the east. This estimate is about midway between values obtained in the two previous attempts to adjust relative transport through Drake Passage to observed velocities. The previous estimates are reconsidered and compared with this latest estimate. (Auth.)

J-19319
Bryden, H.L., Pillsbury, R.D., **Variability of deep flow in the Drake Passage from year-long current measurements,** *Journal of physical oceanography,* Nov. 1977 7(6), p.803-810, 12 refs.

To investigate the reasons for the wide variation in previous estimates of transport of the Antarctic Circumpolar Current through the Drake Passage, an analysis of the spatial and temporal variability of currents at 2700 m depth is made from year-long current measurements on six moorings in the Drake Passage. The currents are found to vary over time scales of about two weeks and over spatial scales shorter than 80 km. An average of the six down-channel velocity components is used to estimate the spatially averaged down-channel velocity, or mean flow, at 2700 m. This mean flow varies from 7.6 to -2.9 cm/s and has a root-mean-square (rms) amplitude of 2.0 cm/s

about its time-averaged value. Provided the geostrophic transport relative to 2700 m depth remains constant in time, these variations may be interpreted as temporal variations of 260 million cu m/s in total transport with an rms amplitude of 50 million cu m/s. The wide variation in previous estimates of transport from short-term measurements can be understood in terms of this observed variation in mean flow. The time-averaged mean flow at 2700 m depth is estimated to be 1.56 cm/s which implies that a transport of 39 million cu m/s should be added to the geostrophic transport of about 100 million cu m/s relative to 2700 m to obtain an estimate of the time-averaged total transport through the Drake Passage. (Auth.)

J-19320

Emery, W.J., **Antarctic Polar Frontal Zone from Australia to the Drake Passage,** *Journal of physical oceanography,* Nov. 1977 7(6), p.811-822, 15 refs.

North-south temperature sections drawn from historical XBT observations averaged over various longitude bands are compared with sections drawn from existing hydrographic data. Corresponding features in both types of sections are related to changes in upper-layer water masses by the use of temperature-salinity relationships. A series of six of these sections covering the area from south of Australia east to the Drake Passage are employed to define the positions of two discontinuities or fronts. These fronts are the northern and southern boundaries of a complex transition region, called the Antarctic Polar Frontal Zone, between the Antarctic and Subantarctic Surface Waters. This transition region varies in width both zonally and seasonally, and is the site of eddies and meanders of the boundaries. (Auth.)

J-19321

Van Andel, T.H., Thiede, J., Sclater, J.G., Hay, W.W., **Depositional history of the South Atlantic Ocean during the last 125 million years,** *Journal of geology,* Nov. 1977 85(6), p.651-698, Refs. p.694-698.

This study is based on a reconstruction of the paleogeographic and paleobathymetric history of the South Atlantic and on a standardized set of sediment and biostratigraphic data from all Deep Sea Drilling Project sites. Standard data sets used are the lithologic description, biostratigraphic age, CaCO3 content, carbonate and carbonate-free sedimentation rates corrected for compaction, and hiatus distribution. For each site the subsidence history has been determined. Paleoceanographic variables used are the spatial and temporal lithofacies distribution, history of calcite compensation depth, surface fertility and lyocline, erosional events, and special lithologies (black shales). During its early history the South Atlantic consisted of a narrow rift divided by the Rio Grande Rise-Walvis Ridge barrier into a restricted northern and an open (to the southern ocean) southern basin. In the northern basin, evaporites are the earliest known marine sediments (Aptian) while more normal pelagic deposits formed in the southern basin. Free circulation of surface water between the southern ocean and the North Atlantic became possible late in the Mesozoic or in the early Cenozoic, and deep circulation (below 3 km depth) paths were open from north to south by the early Cenozoic. During the early and middle Mesozoic the South Atlantic had its own oceanographic character with dominantly terrigenous sedimentation and two anoxic black mudstone phases (Albian and Santonian) probably resulting from a strong oxygen minimum in mid-water caused by either excess surface fertility or old, slow moving bottom water. In the late Cretaceous the South Atlantic became part of the world ocean system and global events have overshadowed local ones since that time. After the early phase of rapid sedimentation of terrigenous material, the depositional history has been influenced mainly by the increasing width and water depth of the basin and by fluctuations of the level and intensity of carbonate dissolution. At the Eocene/Oligocene boundary, the onset of a deep water circulation dominated by a cold circum-polar source of surface water is clearly marked by erosional events, a sharp drop of the calcite compensation depth and the arrival of biogenic siliceous oozes in the Argentine Basin. (Auth.)

J-19323

Boyle, E.A., Sclater, F.R., Edmond, J.M., **Distribution of dissolved copper in the Pacific,** *Earth and planetary science letters,* Nov. 1977 37(1), p.38-54, 47 refs.

Cu concentrations have been determined in six detailed vertical profiles from throughout the Pacific, including station 293 in the Circumpolar Current southeast of New Zealand. The general form of Cu-depth profiles is unique. In the central North Pacific, values decrease from a surface maximum of about 3 nmol/kg to 1.5 nmol/kg in the upper thermocline. Below about 750 m there is an increase to over 6 nmol/kg in the bottom waters with no mid-depth extremum. The suggestion based on previous data that the high bottom values could be maintained advectively requiring that Antarctic Bottom Water must form with a very high Cu concentration is discounted by the data from station 293 whose location was chosen to investigate this point. Since the Antarctic Bottom Water at station 293 does not have an especially high Cu concentration and since profiles of all other tracers (with the exception of Ra-226 with a known bottom source) show a mid-depth maximum, there must be a strong general flux of Cu from the sediment surface into the water column. The profiles in the boundary regions are similar in the deep water but do not have the surface maximum. This unique elemental distribution is maintained by aeolean input to the surface waters comparable in magnitude to the fluvial component, ubiquitous scavenging in the sub-surface and deep water, and a strong bottom source. Apparently the scavenging agent presumably sinking particles, loses its Cu-binding capacity during early diagenesis. The half-life with respect to scavenging is about 1100 years and the overall residence time with respect to input or final removal about 5000 years.

J-19328

Lal, D., **Oceanic microcosm of particles,** *Science,* Dec. 9, 1977 198(4321), p.997-1009, 57 refs.

Analyses of suspended particular matter larger than 1 micrometer, filtered from thousands of liters of surface and deep waters during GEOSECS expeditions to the Atlantic and Pacific oceans, including antarctic waters, have provided new information on the nature and time scales of chemical processes associated with the particles. Trace element and radionuclide data show that particles scavenge trace elements such as Th, Pu, Fe, Pb, and Cu from the ocean column, thereby controlling their concentrations. For other elements, however, particles are a source: carbon and silicon, for example, are introduced at depths as sinking particles dissolve. Studies of both particular concentrations by filtration of seawater and particulate fluxes by using sediment traps seem necessary to delineate the intricate nature of chemical processes in the oceans. (Auth.)

J-19334

Maksimova, M.P., **Biogenic elements of the troposphere and subtroposphere of the Indian Ocean** [Biogennye elementy troposfery i subtroposfery Indiĭskogo okeana], Khimiia moreĭ i okeanov, Moscow, Nauka, 1973, p.40-55, In Russian. 23 refs.

DLC GC98.K45

This is a review of the findings of several nations about the biogenic potential of the Indian Ocean, based on readings taken at 10,000 oceanographic stations in recent years. Charts showing phosphate, nitrate and colloidal silica concentrations at 5-degree intervals from the equator to the antarctic continent are given. Surface concentrations (0-100m) of biogenic elements in the world ocean, N:P and Si:P ratios, and quantitative data for phosphates, nitrates, and silica gel are also presented in tables.

J-19369

Kochergin, V.P., Shcherbakov, A.V., **Numerical simulation of the baroclinic world ocean** [Chislennoe modelirovanie baroklinnogo Mirovogo okeana], *Meteorologiia i gidrologiia*, July 1977 No.7, p.56-63, In Russian with English summary. 23 refs.

A three-dimensional baroclinic model for the dynamics of the world ocean is suggested. The model is based on a difference scheme of the second order of approximation for an elliptic equation with a small parameter in senior derivatives. Fields of density and currents from arctic seas to the coasts of Antarctica are computed for winter with preset density at the area boundary. (Auth.)

J-19373

Botnikov, V.N., **Water budget of Drake Passage and Scotia Sea basin,** *Polar geography.* Apr.-June 1977 1(2), p.168-170, For Russian original see J-17625. 7 refs.

The basin of the Scotia Sea and Drake Passage receives an average of 445 cu km of water per hour, of which 395 cu km/hr are of Pacific origin and 49 cu km of Atlantic origin. The bottom current removes an average of 24 cu km of mixed Pacific and Atlantic water per hour from this basin into the Pacific Ocean. Most of the water (361 cu km/hr) carried into the Atlantic Ocean across the Isla de los Estados-South Georgia profile is of Pacific origin.

J-19390

Devine, M., **Dynamics of the Antarctic Circumpolar Current,** New York City, New York University, 1969, 61p., University Microfilms order No.70-3055, Ph.D. thesis. 33 refs.

The dynamics of the Antarctic Circumpolar Current are examined by means of a theoretical model of a zonally symmetric fluid of constant depth. Non-linear terms are neglected. An initial model, in which the ocean is assumed homogeneous and lateral friction is neglected, gives results which agree substantially with the results of an analysis of Ekman's elementary current system. In order to study baroclinic effects a simple thermal structure is imposed on the fluid. The baroclinicity increases the estimated transport above that for the homogeneous model, and it is shown that, in general, no level of no motion is to be expected in the Antarctic Circumpolar Current. The effects of lateral friction are examined for both the homogeneous and the baroclinic cases by means of imposed Guldberg-Mohn friction. Departures of these models from corresponding models in which lateral friction is neglected are small. Other possible factors which could effect the current are considered in a final section. (Auth.)

J-19395

Importance of ocean upwelling, *Marine Technology Society. Journal,* Sep. 1974 8(8), p.10-16, Reprinted from Mosaic, 5(1) Winter 1974.

The most dynamic ocean turnover process is coastal upwelling. The upwelling areas, comprising 1% of the total area of the world's oceans, are estimated to contain more than one half the ocean's fish catch of over 40 million metric tons/yr. The major upwelling areas include the Antarctic. The primary driving mechanism of a typical coastal upwelling system is the wind system blowing from an atmospheric high pressure toward the equator and producing stress at the surface of the sea. Expeditions to investigate the biological and physical upwelling are described. Efforts toward prediction of upwelling are considered. (Auth. mod.)

J-19516

Ku, T.-L., Knauss, K.G., Mathieu, G.G., **Uranium in open ocean: concentration and isotopic composition,** *Deep-sea research,* Nov. 1977 24(11), p.1005-1017, 37 refs.

Uranium concentrations and U-234/U-238 activity ratios have been determined in 63 seawater samples (nine vertical profiles) from the Atlantic, the Pacific, the Arctic, and the Antarctic oceans, using the alpha-spectrometric method for their determinations. Correlation between uranium and salinity is well manifested by the data from the Arctic and the Antarctic oceans, but such a relation cannot be clearly defined with the (1 to 2)% precision of uranium measurements for the Atlantic and Pacific data. At 95% confidence level: (1) the uranium/salinity ratio is 934,000 000 g/g for the seawater analyzed with salinity ranging from 30.3 to 36.2 per mil; the uranium concentration of seawater of 35 per mil salinity is 3.35 microg/l; (2) the U-234/U-238 activity ratio is 1.14. Uranium isotopes in interstitial waters of the Pacific surface sediments analyzed do not show large concentration differences across the sediment-water interface as suggested by previous measurements. Current estimations of the average world river uranium concentration and U-234/U-238 ratio and of the diffusional U-234 influx from sediments are essentially consistent with a model which depicts a steady state distribution of uranium in the ocean. However, the value for river uranium may be an upper limit estimate. (Auth. mod.)

J-19517

Agenorov, V.K., **Estimate of spatial discreteness of deep-sea observations** [Otsenka prostranstvennoĭ diskretnosti gidrologicheskikh nabliudeniĭ na glubinnykh gorizontakh mirovogo okeana], *Moscow. Gosudarstvennyĭ okeanograficheskiĭ institut. Trudy,* 1971 No.105, p.50-55, In Russian. 4 refs.

The results of a study of mean spatial discreteness of deep-sea observations made in the Atlantic, Pacific and Indian oceans are presented. Illumination at the surface is compared with values for depths of 450,950 and 1950m. Tables include data to the Antarctic coast or to 70S.

J-19525

Fukuchi, M., **Chlorophyll-*a* content in the surface water along the course of the *Fuji* to and from Antarctica in 1976-1977,** *Antarctic record,* Nov. 1977 No.60, p.57-69, 15 refs.

During the relief cruise of the *Fuji* to Showa Station, from Nov. 1976 to Apr. 1977, chlorophyll-*a* content in the surface water was measured at 150 stations as part of the routine observations under the marine biological program of the 18th Japanese Antarctic Research Expedition. Chlorophyll-*a* distributions were generally similar to those noticed in previous observations. The maximum value was observed in the pack ice area off Prince Olav Coast, Antarctica (2.40 mg chl-*a*/cu m). High values were also seen in the Celebes Sea, Makassar and Malacca Straits. (Auth.)

J-19528

Shibayama, N., Ohniwa, Y., **Oceanographic data of the 17th Japanese Antarctic Research Expedition 1975-1976,** *Antarctic record,* Nov. 1977 No.60, p.100-131.

This report presents the results of oceanographic observations, carried out by the 17th JARE in 1975-1976. Surface observation data bathythermograph data, vertical observation data, harmonic constants and daily mean sea level at Showa are given in tables.

J-19544

Olson, B.E., **On the abyssal temperatures of the World Oceans,** Corvallis, Oregon State University, 1968, 151p., University Microfilms order No.67-17,881, Ph.D. thesis. Refs. p.126-129. Lacks Appendix B (Plates).

The distribution of temperature, salinity, potential density and dissolved oxygen content for each of the major deep basins of the

world, including Antarctic regions, is described. In comparison with solar radiation, the energy of geothermal heat, flowing through the sea bottom, is extremely small, still is significant in the circulation of the bottom water. Calculations indicate that in the deep basins of the South Atlantic, the water volume transport necessary to remove geothermal heat, is at least one-tenth of the total northward flow of Antarctic Bottom Water. Plots of mean values of near bottom salinity and oxygen versus mean potential temperatures help to trace the movement of the bottom water. Geothermal and adiabatic warming associated with downslope flow combine to produce a deep temperature in portions of most of the deep basins of the world.

J-19588

Treshnikov, A.F., **Current status of Soviet investigations of the Arctic and Southern Oceans** [Sovetskie issledovaniia Severnogo Ledovitogo i IUzhnogo okeanov na sovremennom etape], *Meteorologiia i gidrologiia*, Nov. 1977 No.11, p.91-99, In Russian with English summary. 12 refs.

Soviet oceanology in polar regions is reviewed from its inception and its fundamental accomplishments summarized. Special attention is given to recent work, including Russian participation in international research efforts like POLEX. A brief description of the direction in which future research will go is also offered.

J-19589

Stepanov, V.N., **Salinity field and its transformation in deep ocean waters** [Pole solenosti i ego perestroĭka v tolshche vod Mirovogo okeana], *Meteorologiia i gidrologiia*, Oct. 1977 No.10, p.89-93, In Russian. 5 refs.

Charts are shown giving salinity fields for surface, mid-level and deep waters from the Arctic to the Antarctic. Based on new data, these maps greatly refine earlier concepts of salinity field structure.

J-19590

Zykov, I.D., Oliunin, IU.V., **Water circulation along an Antarctica-Africa profile** [Tsirkuliatsiia vod na razreze Antarktida-Afrika], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy*, 1974 Vol.325, p.161-170, In Russian. 12 refs.

Using temperature and salinity data gathered on the 1970-1971 *Professor Vize* cruise, the authors calculated zonal, meridional, and vertical components of water circulation, flow rates along the entire profile and separately for the Antarctic Circumpolar Current. Basic frontal zones are positioned by means of six different indicators.

J-19619

Foster, T.D., **International Weddell Sea Oceanographic Expedition, 1977,** *Antarctic journal of the United States*, Oct. 1977 12(4), p.40-41.

The work of the third phase of the International Weddell Sea Oceanographic Expedition (IWSOE) began in Feb. 1977 with the setting out of current meter moorings by the Norwegian vessel *Polarsirkel*. Current meters designed to record current speed, direction, temperature, and conductivity were set on the moorings, and tide gages were fixed. *Polarsirkel* also did more than a hundred high resolution conductivity-temperature-depth (CTD) soundings. Future plans call for research efforts by ships from Argentina, Norway, and the U.S.

J-19620

Michel, R.L., Jackson, T.L., **International Weddell Sea Oceanographic Expedition, 1976: tritium results,** *Antarctic journal of the United States*, Oct. 1977 12(4), p.41-43, 4 refs.

Tritium measurements made on 129 water samples collected in the Weddell Sea are presented. Concentrations are given in tritium units (TU). Winter water tritium measurements are consistently around 0.47 TU in the gyre region of the western Weddell Sea. However, as the continental shelf break is approached at the northwestern shelf, concentrations begin to rise to about 0.7 TU. Surface tritium measurements show concentrations near the shelf to be 0.2 to 0.3 TU higher than samples taken from the gyre. In the Scotia Ridge area very high concentrations occur in the bottom water on the west side with much lower values to the east. Surface water tritium concentrations range from 0.5 to 1.1 TU. The results are discussed in relation to Foster and Carmack's model on WSWB formation (J-16970) and WSBW movement (J-16510).

J-19621

Jacobs, S.S., **Ross Ice Shelf Project: physical oceanography,** *Antarctic journal of the United States*, Oct. 1977 12(4), p.43-46, 4 refs.

Oceanographic observations carried out in the Ross Sea from *Northwind* as part of the Ross Ice Shelf Project (RISP) included salinity-temperature-depth measurements, water sampling for hydrochemical determinations, collection of sediment samples, expendable bathythermograph casts, and pack ice observations. Samples were collected for determinations of tritium, 0-18, barium, nitrate, diatom content, and proteins; others were processed aboard ship for salinity, dissolved oxygen, silicate, and phosphate. A new device, the 'Northwind donut' protected the STD/rosette from ice floes. Preliminary results indicate rapid temporal and spatial changes in the hydrographic structure over the continental shelf and slope and a significant decrease in tritium values since 1972. 0-18 findings are summarized.

J-19622

Foster, T.D., Bruchhausen, P., **Oceanographic observations near the edge of the Ross Ice Shelf in McMurdo Sound,** *Antarctic journal of the United States*, Oct. 1977 12(4), p.46-48, 4 refs.

The results of observations made at three hydrographic stations, near McMurdo Station, Blue Glacier, and the Dailey Is., are tabulated. Salinity-temperature-depth measurements and freezing points for the observed salinity at atmospheric pressure and at *in situ* pressure are given. Procedures are briefly summarized. Temperatures and salinities seem consistent with the view that net flow in the western part of McMurdo Sound is to the north. Salinity values of water samples collected from the bottom of a large crevasse in the Ross Ice Shelf east of Minna Bluff were nearly the same as those of the open ocean in McMurdo Sound.

J-19623

Robinson, E.S., Neuburg, H.A.C., Williams, R.T., Whitehurst, B.B., Moss, G.E., **Provisional cotidal charts for the southern Ross Sea,** *Antarctic journal of the United States*, Oct. 1977 12(4), p.48, 2 refs.

Phase angles for the tidal constituents at nine sites in the southern Ross Sea have been used to compile provisional diurnal cotidal charts. Some general features of the tidal range (double amplitude) are described.

J-19624

Whitworth, T., **FDRAKE 77,** *Antarctic journal of the United States*, Oct. 1977 12(4), p.48-50, 2 refs.

The third field phase of the First Dynamic Response and Kinematics Experiment (FDRAKE) aboard *Melville* in the Drake Passage included the recovery of current, temperature, and pressure recorder moorings, and tide gages deployed during FDRAKE 76, installation of two replacement pressure recorders, and deployment of the 1977 array. In addition, hydrographic and salinity-temperature-depth sur-

veys were conducted before and after array deployment to define the density field. Data return from the FDRAKE 76 array was excellent. The 1977 array is expected to determine the spatial scale of variability of the currents in Drake Passage. Preliminary results show that the 1977 array was located near the southern boundary of the Polar Frontal Zone.

J-19625

Hayes, S.P., Zenk, W., **Moored temperature time series in the Polar Front Zone during FDRAKE, 1976,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.50-51, 6 refs.

During the 1976 phase of the First Dynamic Response and Kinematic Experiment (FDRAKE), temporal variations of the temperature field in the depth interval from 200 to 350 m were measured. The mooring was deployed in the central Drake Passage near the Antarctic Polar Front Zone (APFZ). Several expendable bathythermograph (XBT) sections were taken across the APFZ. Isotherm depths as a function of time and the location of the Polar Front axis as determined from the XBT sections are plotted.

J-19626

Joyce, T.M., Patterson, S.L., **Stirring processes within the antarctic Polar Front Zone,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.51-53, 2 refs.

Investigations into the exchange of the upper water masses across the Polar Front Zone distinguish two modes: (1) mesoscale rings or eddies and 2) small-scale, cross-frontal intrusions or interleaving. Observations of these processes within the circumantarctic current during FDRAKE 76 are described. A model describing the cross-frontal exchange necessary to maintain interleaving in a statistically steady state has been proposed and is being enlisted to interpret the data from FDRAKE 76.

J-19627

Emery, W.J., Savchenko, V.G., Gordon, L.I., **Soviet-American research aboard RV *Professor Zubov*,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.52-54.

The purpose of this research was to study the oceanic frontal zones and the distribution of water masses between Australia and the antarctic continent. The tasks included deployment of three current meter moorings in the Polar Front Zone and 36 hydrographic stations along 132E between 65 and 35S, expendable bathythermograph surveys, and comparison of Soviet and U.S. techniques of chemical analysis. An important intercalibration of chemical standards was also carried out.

J-19628

McCartney, M.S., **Water mass renewal in the subantarctic zone,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.54-56, 8 refs.

Subantarctic mode water (SAMW) (McCartney, 1977) renewal in the subantarctic zone is examined and illustrated. In typical summer and winter profiles taken south of Australia the thick 8C thermostad north of the subantarctic front that marks the deep winter overturned water (WOW) of the SAMW renewal cycle is easily detectable. The year-around persistence of the SAMW thermostads is due to the fundamentally different character of the cooling cycle, which creates WOW, compared to the heating cycle, which creates the seasonal thermocline. The total thermal cycle may or may not involve a significant net annual air-sea heat exchange. The formation process for Antarctic Intermediate Water is re-examined.

J-19629

Emery, W.J., **Temperature sections from supply vessels,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.56-57.

As part of the International Southern Ocean Studies, routine observations of upper layer temperature were made in 1977 by 6 antarctic re-supply vessels using expendable bathythermographs (XBT). Meteorological parameters were recorded at each XBT cast. When fully processed the data should provide a picture of southern ocean thermal structure during the austral summer of 1976-77.

J-19630

Spillane, M., **Effect of meridional circulation in large scale current topography interactions,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.57-58, 4 refs.

A steady barotropic model in which a planetary scale circulation is driven by the wind is developed to answer the questions: 1) Do the zonal models which neglect meridional circulations describe more general current-topography interactions? 2) Are there topographic scales, greater than Li, which generate significant relative vorticity? If the bottom topography is sufficiently shallow, then the large scale circulation is unaffected by it. When the topography is characterized by the planetary and intermediate scales, zonal models, which neglect the existing meridional circulation, may fail to reproduce the proper amplitudes and spatial scales of the perturbed motion fields.

J-19631

Reid, J.L., **Deep currents in the northwestern part of the Argentine Basin,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.58, 4 refs.

The results of measurements from three free-vehicle current meters deployed in the north-central part of the Argentine Basin are tabulated. The meters were deployed a few hundred meters above the bottom in depths where they could measure the southward-flowing North Atlantic Deep Water in the west and the deeper northward-flowing Circumpolar Water farther offshore.

J-19632

Boltovskoy, D., **ARA *Islas Orcadas* cruise 6 in the Argentine Basin,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.59-60, 1 ref.

ARA *Islas Orcadas* cruise 6 was shared by Argentine and U.S. scientists. The ship operated in the Atlantic Ocean off Argentina with emphasis on the Subtropical Convergence. Current meters were deployed at three locations and retrieved by U.S. scientists; physical and chemical oceanographic data and plankton were collected by Argentina.

J-19633

Gordon, A.L., La Brecque, J., ***Islas Orcadas* cruise 12: Cape Town to Buenos Aires,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.60-63.

The multidisciplinary cruise of *Islas Orcadas,* Jan. 3-Mar. 4, 1977, conducted research in physical oceanography, marine geology, and geophysics. The physical-chemical oceanography program included conductivity-temperature-depth and dissolved oxygen hydrographic stations and underway expendable bathythermograph observations. The data show the particular activity and complexity of the water mass between Africa and Antarctica. An important eddy was encountered at 67S 7.5W. Forty-four piston cores and 31 trigger cores were recovered. Geophysical objectives were focused on the Queen Maud Land coastal area and determination of the magnetic anomaly lineation and basement depth of the Atlantic-Antarctic Basin. Conclusions based on preliminary analysis of the geophysical data are given and the cruise track and stations are shown.

J-19638
Kennett, J.P., **Deep sea drilling contributions to studies of the evolution of the southern ocean and antarctic glaciation,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.72-75, 25 refs.

Initial reports from the Deep Sea Drilling Project (DSDP) Legs 28, 29, 35, and 36 form the basis for recent advances in understanding the long term climatic, glacial, and paleoceanographic record of the southern ocean and Antarctica. Australia began to drift northwards from Antarctica forming an ocean in the Early Eocene (55 m.y.a.). The first major climatic-glacial threshold was crossed 38 m.y.a. near the Eocene-Oligocene boundary when substantial antarctic sea ice began to form, resulting in a rapid temperature drop in bottom waters and other changes in deep-sea faunas, oceanic circulation, sediment erosion, and the calcium carbonate compensation depth. During the Oligocene (38 to 22 m.y.a.) widespread glaciation probably occurred throughout Antarctica and deep-seated circumantarctic flow developed south of the South Tasman Rise. The next principal climatic threshold was crossed during the Middle Miocene (14 to 11 m.y.a.) when the antarctic ice sheet formed. Biogenic sediment changes in the early Miocene reflect the beginning of circulation related to development of the Antarctic Convergence. Ice volumes increased beyond those of the present day during the latest Miocene. The Quaternary marks a peak in activity of oceanic circulation in the southern ocean.

J-19741
Poiarkov, S.G., Demin, IU.L., Bulatov, IU.L., **Structure of large-scale circulation of Atlantic Ocean waters,** *Soviet meteorology and hydrology,* 1976 No.4, p.37-43, For Russian original, see J-17640. 23 refs.

A generalized model proposed by A.S. Sarkisian for calculation of ocean currents is used as a basis for a study of the vertical restructuring of macrocirculation formations in the Atlantic Ocean. The first calculation covering the entire area of the ocean (from 65.5 N to 65.5 S), from the surface to the bottom, is carried out. The water-density data used were averaged over five-degree spherical trapezoids and were in mutual agreement with the wind-field inhomogeneities over the ocean and the bottom relief in the same scale. Charts of the pressure distribution and current fields for the deep waters are presented. The question as to the relationship of the drift and gradient components of the flows in the surface layer is investigated, and the main flows in the ocean are described in detail. The transport rate in the bottom layer is estimated quantitatively. It is shown that the restructuring of the circulation systems is closely related to large-scale elements of the water stratification. A comparison with the results of earlier studies is made. (Auth.)

J-19742
Leont'ev, O.K., **Attempt at compiling a schematic map of exogenetic geomorphological factors acting on the World ocean bottom** [Opyt sostavleniia skhematicheskoĭ karty ekzogennykh geomorfologicheskikh faktorov, deĭstvuiushchikh na dne Mirovogo okeana], *Moscow. Universitet. Vestnik Seriia 5 Geografiia,* Sep.-Oct. 1977 No.5, p.82-88, In Russian with English summary.

Data now available make it possible to give a small-scale cartographic generalization of our ideas on the exogenetic processes shaping the topography of the World Ocean. These are, primarily, various hydrogeneous processes, such as the work of waves and littoral currents (including tidal ones), and the activity of surface ocean currents as well as bottom density currents. The latter, as has been found recently, are capable of creating enormous worked-out (abyssal) valleys as well as accumulative forms. The map also represents the zone of action of gravitational processes (feculence streams and subaqueous slumping). Another part of the map's contents consists of representation of the main types of marine sedimentation playing an important role in the shaping of the bottom relief. (Auth.)

J-19781
Treshnikov, A.F., ed, **Problems of the Arctic and the Antarctic, collection of articles; Vol.47, 1977,** New Delhi, Amerind Publishing Co., 1977, 198p., TT 76-52038, Translation of Problemy Arktiki i Antarktiki, sbornik stateĭ; vyp.47, 1977. Refs. passim. For individual articles see 32-2540 through 32-2545 or F-19784, F-19788, I-19786, I-19787, I-19790, J-19782, J-19783, J-19785 and J-19789.

This volume is devoted to the scientific problems of the POLEX-North and POLEX-South studies. The articles are divided into three broad groups. In the first, polar problems are discussed in the global context. Here a new scheme of global oceanic circulation is proposed, latitude dependence of the parameter beta is evaluated and the need to conduct full-scale research within the framework of global experiments is indicated. The problems of the study of sea ice are reviewed and the range of problems associated with the development of the theory of transformation of atmospheric circulation forms on the basis of a hydrodynamic model is outlined. The second group opens with articles devoted to analysis of the annual variation in circulation of the surface waters and ice of the Amerasian subbasin by the method of natural orthogonal components. The last two articles are devoted to analysis of low-frequency fluctuations in the ice cover of the Arctic seas and ice drift in the Arctic Basin. The third group comprises articles dealing with the problems of the south polar region. Here the problems of the wind drift of Antarctic sea ice, circulation of surface and bottom waters of the Southern Ocean and the influence of baroclinicity on the turbulence in the underice boundary layers are considered. Two articles are devoted to the problems of polar climatology and simulation of nonlinear effects in the baroclinic atmosphere. (Auth. mod.)

J-19782
Treshnikov, A.F., Baranov, G.I., **Circulation of the world ocean: global studies,** *Problems of the Arctic and the Antarctic, collection of articles,* 1977 Vol.47, p.1-20, TT-76-52038, For Russian original, see J-17381. 23 refs.

On the basis of existing data on density and tangential wind pressure fields, a new scheme for thermohaline ocean circulation is presented. Included are all waters from 60 deg N to the antarctic coast. A close correlation was identified between circulation and sedimentation processes. It is found that the Weddell Sea is the main source of Antarctic bottom water, another powerful source being located in the Davis Sea.

J-19783
Baranov, G.I., **No-motion layer of the world ocean,** *Problems of the Arctic and the Antarctic, collection of articles,* 1977 Vol.47, p.21-24, TT-76-52038, For Russian original see J-17382. 9 refs.

A vorticity equation and empirical water density and tangential wind pressure were used as the foundations for calculating the zero surface topography of the ocean. It appears that the depth of the zero surface fluctuates from 0.7 to 3.5 km and that its average depth is around 2 km. Charts showing isobaths in km for the world ocean are included.

J-19785
Gudkovich, Z.M., **Problem of conjugation of currents in the Arctic and Southern Oceans,** *Problems of the Arctic and the Antarctic, collection of articles,* 1977 Vol.47, p.43-48, TT-76-52038, For Russian original, see J-17385. 11 refs.

A hypothesis is presented by which a change in sea level between the Pacific and Atlantic Oceans is explained by increased hydrodynamic resistance resulting from the constriction of a cross-section of the Antarctic Circumpolar Current in the Drake Passage. This phenomenon partially accounts for the constant Transarctic Current in the Arctic Ocean. Harmonic analysis of the average flow velocity throughout the year in the Arctic Basin done from the drift station *Severnyĭ Polius* and diffusion of the Antarctic Circumpolar Current shows that annual and semiannual fluctuation phases nearly coincide. This could be indirect corroboration of the hypothesis.

J-19789

Baranov, G.I., Malek, V.N., **Computation of water circulation of the Southern Ocean by the isopycnic model,** *Problems of the Arctic and the Antarctic, collection of articles,* 1977 Vol.47, p.160-165, TT-76-52038, For Russian original, see J-17388. 3 refs.

Calculations based on an isopycnic model reveal a 2-layer water circulation pattern around Antarctica; the hypothesis of a zero dynamic surface is not taken into consideration. In the upper half of the ocean there is a circumpolar current with a general west-east direction, while on the bottom half a circumpolar countercurrent exists.

J-19809

Middleton, J.H., Foster, T.D., **Tidal currents in the central Weddell Sea,** *Deep-sea research,* Dec. 1977 24(12), p.1195-1202, 9 refs.

A 349-day series of consecutive hourly readings from a single current meter mooring in the deep water of the Weddell Sea was analyzed to determine the tidal currents. Amplitudes and Greenwich phase-lags were found for both the east-going and north-going components of velocity for the eight principal harmonic constituents. Constituent tidal ellipses were drawn for the four most energetic constituents O1, K1, M2, and S2; the current vectors rotated clockwise in each case. Analysis of each successive quarter of the time series yielded results consistent with those from analysis of the entire record. The amounts of barotropic and baroclinic energy in the diurnal and semidiurnal tidal bands are consistent with the barotropic nature of circulation in the Weddell Sea. (Auth.)

J-19812

Harris, T.F.W., Stavropoulos, C.C., **Satellite-tracked drifters between Africa and Antarctica,** *American Meteorological Society. Bulletin,* Jan. 1978 59(1), p.51-59, 16 refs.

Trajectories and velocities are reported for six drifters launched in Feb. 1976 in the South Atlantic Ocean mostly along the 10W meridian between 35 and 57S. These drifters had drogues centered on 7 or 57 m and the tracking durations were 33-302 days. In the Circumpolar Current the tracks were remarkably zonal. The expected deflections occurred at the mid-ocean ridges, and generally the course of the drifters was consistent with the published streamlines of geostrophic transport. The trajectory of a drifter launched equatorward of the subtropical convergence, at 35S, was one of complex eddying motion, accompanied by a slow drift to the northeast. In the Circumpolar Current, the latitudinal variation of zonal current velocity was qualitatively similar to the mean annual wind shear and to the geostrophic zonal surface velocities calculated by Ostapoff (1962). Drifter velocities were, however, considerably larger than the geostrophic velocites. Maximum mean velocities (approx 0.3m/s) occurred along 49 deg 50 min. (Auth. mod.)

J-19913

Gordon, A.L., **Basin waters of the Bransfield Strait,** *Journal of physical oceanography,* Mar. 1978 8(2), p.258-264, 12 refs.

Hydrographic data were obtained within the Bransfield Strait and adjacent waters during Feb. and Mar. 1975 by R/V *Conrad* and R/V *Melville* as part of FDRAKE 75. Within the Strait the Circumpolar Deep Water is either missing or its influence is weak. The Strait contains three basins. The deep and bottom waters of these basins, with depths to nearly 2600 m, are significantly colder, less saline, higher in oxygen and lower in nutrient concentrations than the deep exterior water adjacent to the Strait. These characteristics confirm Clowes' (1934) contention that the waters of these basins are renewed by local convection. Comparison of T-S relations suggests that one mixing component of near-surface water in the convective renewal of Bransfield bottom water is the same as that involved in Weddell Sea bottom water formation. The FDRAKE data set shows that the character of the deep and bottom waters is different within each of the three major basins, suggesting significant spatial (or temporal) variability of the convective events occurring in the Strait. Water mass distributions of the southern Drake Passage and the Weddell Sea are apparently not influenced by outflow of Bransfield basin water. Likewise, there seems to be no direct outflow of deep or bottom waters from the Bransfield basins into the Weddell-Scotia Confluence Zone. (Auth. mod.)

J-19914

Williams, D.F., **Late Quaternary fluctuations of the Polar Front and Subtropical Convergence in the southeast Indian Ocean,** *Marine micropaleontology,* Dec. 1976 1(4), p.363-375, 29 refs.

Planktonic foraminiferal assemblages have been examined in five deep-sea cores located beneath the present position of the Subtropical Convergence Zone. Fluctuations in the positions of the Subtropical Convergence and Polar Front during the last 500,000 years are recorded by frequency changes in the total planktonic foraminiferal fauna, by coiling changes in *Neogloboquadrina pachyderma* and by changes in species diversity. Late Quaternary paleoceanographic events in the temperate southeast Indian Ocean can be correlated with events in the South Pacific Ocean, Atlantic Ocean and Caribbean Sea on the basis of oxygen isotope stratigrphy for the last 230,000 years, Th-230 dating and the biostratigraphic displacement of *Globorotalia crassaformis* by *Globorotalia truncatulinoides* at approximately 300,-000 years. (Auth.)

J-19942

Morner, N.-A., **Low sea levels, droughts and mammalian extinctions,** *Nature,* Feb. 23, 1978 271(5647), p.738-739, 11 refs.

A simple geophysical model is proposed to explain the established correlation between regressions, vegetational changes and extinctions during the Cenozoic. It is suggested that any regression (glacial eustatic, tectono eustatic or geoidal eustatic) will also affect the ground water table under the continents by geoid changes and lead to drastic environmental and faunal changes, including extinctions. Instead of extinction by temperature decrease, the chain reaction regression-drought-extinction is proposed. The influence of the antarctic ice cap on worldwide climatic changes is considered.

J-19992

Kolla, V., Henderson, L., Sullivan, L., Biscay, P.E., **Recent sedimentation in the southeast Indian Ocean with special reference to the effects of Antarctic Bottom Water circulation,** *Marine geology,* May 1978 27(1/2), p.1-17, Refs. p.15-17.

In the southeast Indian Ocean the influence of the Antarctic Bottom Water (AABW) on sedimentation is evidenced by the intensity of the water turbidity near the bottom, and by the mineralogy (carbonate and quartz abundances) of the sediments and current markings on the sea floor. In the deep basins south of 50S (South Indian and Tasman basins), besides high biogenic siliceous opal produc-

tivity, the greater influence of AABW is recorded in shallower carbonate compensation depths than is the case in basins north of 50S. Spreading of the AABW from the regions south of the Southeast Indian Ridge to the regions north of it is through fracture zones in the ridge at about 123-126E and 145-155E. These bottom-water passages are characterized by (1) low carbonate, high quartz, or high clay contents in the sediments, (2) distinct current markings suggesting the northward flow, and (3) high bottom-water turbidity. In large basins such as the South Indian and Tasman basins which have moderate-to-high near-bottom turbidity, central portions tend to be less turbid than the margins, suggesting strong marginal circulation. The Emerald Basin, situated east of the Tasman Basin and north of the Indian-Pacific Ridge, has high near-bottom turbidities. This suggests that the AABW in the Emerald Basin is derived directly from the source regions south of the ridge, although some of the water may also be spreading from the Tasmin Basin. (Auth.)

J-20022

Polar Oceans Conference, Montreal, May 1974, Dunbar, M.J., ed, **Polar oceans,** Montreal, Arctic Institute of North America, 1977, 681p., Numerous refs. For selected individual papers see 29-183, 29-1810, and 32-3408 through 32-3434 or B-20035 through B-20038, B-20040 through B-20044, F-20033, F-20045, F-20046, J-20023 through J-20032, J-20034, and J-20039.

In 48 papers various authors treat the polar oceans of both hemispheres from the aspects of ocean currents and circulation; sea ice and its accompanying biota; comparing ocean productivity in cold and warm oceans; and climatic changes related to the polar regions and the interpreted record of these changes showing in marine and geologic structures.

J-20023

Deacon, G.E.R., **Antarctic water masses and circulation,** Polar oceans. Proceedings of the Polar Oceans Conference, Montreal, May 1974. Edited by M.J. Dunbar, Montreal, Arctic Institute of North America, 1977, p.11-16, 2 refs.

The general character of the water circulation is fairly well known. It is a three-layer system in which water that is cooled and diluted in high latitudes spreads outwards at the surface and bottom of the ocean, while warm water, which replenishes the salt as well as heat, moves inwards in the intervening deep layer. Attention is now focused on quantitative studies of exchange between the layers and of the zonal and meridional transports. They point to the need for long-term measurements of drift at all depths and multi-ship studies of the effect of passing depressions on the density and velocity patterns. (Auth.)

J-20024

Gordon, A.L., Taylor, H.W., Georgi, D.T., **Antarctic oceanographic zonation,** Polar oceans. Proceedings of the Polar Oceans Conference, Montreal, May 1974. Edited by M.J. Dunbar, Montreal, Arctic Institute of North America, 1977, p.45-76, Refs. p.73-76.

The Antarctic waters of the southwest Pacific and southeast Indian oceans can be divided into four main zones, which are from south to north: Shelf, Antarctic, Polar Front and Subantarctic zones. The vertical processes within each zone and interaction of neighboring zones must accomplish the large flux of heat and salt determined from budget studies. Antarctic Bottom Water forms near the separation of the two southern zones. In the Antarctic zone vertical convection is possible during the winter months, especially in the southern parts where sea ice creates a cold-saline surface layer. In the Polar Front zone to the north, the upper kilometer has much interleaving of relatively warm-salty with cold-fresh water types in vertical scales of tens to hundreds of meters. It is suggested that these are generated by eddies acting on density surfaces and so accomplish heat and salt flux in the upper kilometer. The wind-produced upwelling around Antarctica is asymmetric, being higher in the eastern hemisphere. The formation of Antarctic Intermediate Water within the polar front zone may be related to the disruption of balance between northward Ekman drift and southward non-geostrophic drift associated with the north-south slope of the sea surface. The balance would be upset when the wind weakens or shifts to the south and when the currents intensify, perhaps in response to a bottom topographic feature. (Auth.)

J-20025

Shamont'ev, V.A., **Changes in the hydrological characteristics of the Southern Ocean,** Polar oceans. Proceedings of the Polar Oceans Conference, Montreal, May 1974. Edited by M.J. Dunbar, Montreal, Arctic Institute of North America, 1977, p.77-85, 15 refs.

This paper analyzes seasonal and long-term variations in salinity, temperature, currents, heat and salt transport along the 20E meridian between Africa and Antarctica, 1935 to 1970. The greatest variation occurs in the northern part of this section, but south of 45S temperature variations in the upper 200 m become fairly pronounced, attributable to variation in insolation. Both seasonal and longer term variations are attributed to changes in the atmospheric circulation. (Auth.)

J-20026

Tchernia, P., **Study of the east-west antarctic current by means of icebergs tracked by the EOLE satellite** [Etude de la dérive antarctique est-ouest au moyen d'icebergs suivis par le satellite EOLE], Polar oceans. Proceedings of the Polar Oceans Conference, Montreal, May 1974. Edited by M.J. Dunbar, Montreal, Arctic Institute of North America, 1977, p.107-120, In French with English summary. 13 refs. Includes discussion.

By using the French EOLE Satellite it has been possible to follow for 9 to 12 months, with a precision of about one nautical mile, the daily drift of four icebergs. The four tracks lay 30 to 100 nautical miles off Eastern Antarctica between 140E and 23W, and about 60S to 71S. The distance covered in 24 hours varied from 1 to 25 miles, with a mean of about 5 to 7. For three of these trajectories the main component was to the west, but for one it was to the east. Towards 85 to 90E, where the Kerguelen-Gaussberg Ridge approaches the Antarctic Continent, two icebergs were carried to the north on an erratic course. One of them after reaching 59S seems to have been taken over by the west wind drift. From the study of these four tracks, it was found difficult to obtain information on the east wind drift and its variation, although that was the main object of the experiment. (Auth. mod.)

J-20027

Mann, C.R., **Currents and water masses in the vicinity of Drake Passage,** Polar oceans. Proceedings of the Polar Oceans Conference, Montreal, May 1974. Edited by M.J. Dunbar, Montreal, Arctic Institute of North America, 1977, p.121-127, 7 refs. Includes discussion.

The currents in Drake Passage are discussed in the light of direct current measurements in Jan. 1969 from the *Thomas Washington,* and another set of measurements made in Feb. 1970 from the CSS *Hudson.* The 1969 measurements showed easterly-directed bottom currents. The 1970 measurements showed variable westerly-directed bottom currents. The westerly flow in the southern part of the Passage is correlated with an influx into Drake Passage of cold Weddell Sea bottom water from the Scotia Sea. In Feb. 1970 CSS *Hudson* laid four moorings across the western end of Drake Passage. Each mooring carried three current meters, one at 150 m depth, one at 1500 m depth, and one 120 m from the sea floor. The moorings were in place for 13 days and were recovered intact. Of the 12 current meters, 9

operated all the time and 3 yielded partial records. Examination of the records showed that the currents recorded at the bottom all had a westerly component, in contrast to the Reid measurements of Reid and Nowlin (1971) in Jan. 1969, when easterly flowing bottom currents were recorded. This difference has caused re-examination of the water mass structure, and comparison of the currents observed with the distribution of properties in an attempt to decide whether the observed currents could be representative of mean currents averaged over a long period of time. (Auth. mod.)

J-20028

Heath, R.A., **Circulation across the ice shelf edge in McMurdo Sound, Antarctica,** Polar oceans. Proceedings of the Polar Oceans Conference, Montreal, May 1974. Edited by M.J. Dunbar, Montreal, Arctic Institute of North America, 1977, p.129-149, 18 refs.

The circulation in the southern end of McMurdo Sound near the Ross Ice Shelf seasonal ice boundary is synthesized mainly in terms of previously published current, temperature, and salinity measurements. Currents in this area are highly variable with a strong diurnal tidal influence. The declinational diurnal tidal elevation components K1 and O1 have approximately the same amplitude, and the difference in their speeds leads to large cyclic variations in the elevations and flow over a period of 13 days. The mean flow, deduced from many different sets of measurements made over the past 14 years, consists of a southward drift towards the permanent ice in the middle of the Sound, and a northward flow on both the western and eastern sides of the Sound. The water in the outflow on the eastern side near Ross Island probably flows under the Ross Ice Shelf east of Ross Island. A net volume transport of 0.36 x 10,000 cu m/s towards the permanent ice is observed in summer. The main heat transport towards the ice shelf occurs in the upper 150 m in the center and eastern side of the Sound, with a value of 4.0 and 10 exp 17 J per year. (Auth.)

J-20029

Carmack, E.C., Foster, T.D., **Water masses and circulation in the Weddell Sea,** Polar oceans. Proceedings of the Polar Oceans Conference, Montreal, May 1974. Edited by M.J. Dunbar, Montreal, Arctic Institute of North America, 1977, p.151-165, 12 refs. Includes discussion.

The circulation and volumetric distribution of the water masses of the Weddell Sea are described, based upon over 150 selected hydrographic stations occupied from 1957 to 1970, and 78 new stations occupied during the 1973 International Weddell Sea Oceanographic Expedition. The general circulation is characterized by 1) a slow cyclonic movement over most of the oceanic basin; 2) two cyclonic gyres above the central and southwestern continental shelf; 3) an intense westerly surface current along the edge of the continental shelf; 4) a contour-following flow of newly-formed bottom water (designated Weddell Sea Bottom Water) beginning between 30W and 40W and continuing in a clockwise direction around the periphery of the basin. Volumetric distributions support the notion that the core of Antarctic Bottom Water is formed by the mixing of cold Shelf Water and Warm Deep Water. Water transport estimates, derived from current meter observations, indicate that the volume of newly-formed bottom water flowing out of the sea is small compared to the total volume of Antarctic Bottom Water in the Weddell Sea. (Auth.)

J-20030

Foster, T.D., Carmack, E.C., **Antarctic Bottom Water formation in the Weddell Sea,** Polar oceans. Proceedings of the Polar Oceans Conference, Montreal, May 1974. Edited by M.J. Dunbar, Montreal, Arctic Institute of North America, 1977, p.167-177, 7 refs. Includes discussion.

The formation of Antarctic Bottom Water in the Weddell Sea is investigated by means of a series of hydrographic sections obtained from historical data and three closely spaced sections carried out during the 1973 International Weddell Sea Oceanographic Expedition. These sections show that Antarctic Bottom Water probably forms in the vicinity of the shelf break in the southern and western parts of the Weddell Sea. It is speculated that a two-stage process takes place whereby 1) Warm Deep Water is modified by mixing with the Winter Water lying above and 2) this Modified Warm Deep Water mixes with Western Shelf Water to form a very cold type of bottom water. This newly formed Weddell Sea Bottom Water is then further modified by mixing with the overlying Warm Deep Water as it flows out of the Weddell Sea. The resultant product of these mixing processes is the classically defined Antarctic Bottom Water. (Auth.)

J-20031

Killworth, P.D., **Some models of bottom water formation,** Polar oceans. Proceedings of the Polar Oceans Conference, Montreal, May 1974. Edited by M.J. Dunbar, Montreal, Arctic Institute of North America, 1977, p.179-189, 23 refs. Includes discussion.

Models designed to improve understanding of the effects of wind and buoyancy forcing in the production of Antarctic Bottom Water (AABW) are described. The first examines motions on the continental slope, independent of the long-shore direction, from which it is concluded that the primary driving of the sinking water mass is by the wind-induced incoming surface Ekman flux, and the circulation is only slightly modified by density variation in the meridional plane. The second model examines the effects of vertical boundaries on purely baroclinic flows on the continental shelf. Geostrophically-produced upwelling on western boundaries gives mixing and induces an east-west gradient of density, which biasses production of AABW towards the western edge of the Weddell and Ross Seas. Finally, the barotropic motion induced on the shelf by the interaction of bottom topography and density variation is explored, in an attempt to link together the previous models. (Auth.)

J-20032

Gordon, A.L., **International Southern Ocean studies,** Polar oceans. Proceedings of the Polar Oceans Conference, Montreal, May 1974. Edited by M.J. Dunbar, Montreal, Arctic Institute of North America, 1977, p.219-225, 11 refs.

The ISOS program in 1974 entered a planning period in which a number of pilot experiments were to be carried out. In May of that year these consisted of: 1) study of the circulation and water mass distribution in the Drake Passage-western Scotia Sea, including long-term monitoring of currents in the Drake Passage; 2) winter period measurements below the sea ice in McMurdo Sound; 3) model studies of the Antarctic circumpolar current over realistic topography. A number of other field activities were considered, including monitoring of the deep western boundary current in the South Pacific. Theoretical studies were developed during the summer of 1974 as a result of activities of the ISOS theoretical panel. (Auth.)

J-20034

Foldvik, A., Kvinge, T., **Thermohaline convection in the vicinity of an ice shelf,** Polar oceans. Proceedings of the Polar Oceans Conference, Montreal, May 1974. Edited by M.J. Dunbar, Montreal, Arctic Institute of North America, 1977, p.247-255, 9 refs.

Owing to the depression of the freezing point with increasing pressure, sea-water in contact with the underside of the floating Antarctic Ice Shelf may reach potential temperatures well below its surface freezing point. Hydrographic observations near the Filchner Ice Shelf indicate that *in situ* water supercooled on the order of 0.02C, exists at depths below 300 to 400 m. If potentially supercooled water

is displaced upwards, a type of conditional instability may result, owing to the formation of ice crystals in the ascending water. The resulting thermohaline convection is discussed and some possible effects on the formation of Antarctic Bottom Water and underwater sea ice, as well as biological implications, are considered. It is also pointed out that salinity determined by standard water-bottle sampling technique may be beset with serious errors, of the order of 0.1 per mille, unless the sample is thoroughly mixed before drawing. (Auth.)

J-20039

Bienati, N.L., Comes, R.A., Spiedo, H., **Primary production in antarctic waters,** Polar oceans. Proceedings of the Polar Oceans Conference, Montreal, May 1974. Edited by M.J. Dunbar, Montreal, Arctic Institute of North America, 1977, p.377-389, 6 refs.

In Antarctic waters of the Gerlache Strait and environs, growth conditions of the phytoplanktonic colony during summer are reflected in an increase in the concentration of photosynthetic pigments, a decrease in the concentration of inorganic nutrients, and a high capacity for carbon uptake (primary production). At the Almirante Brown Scientific Station a complete cycle of primary production has been studied with *in situ* incubations and basic determinations during the austral summer—a period of optimal conditions. The maximum gradient is detected from mid-Dec. until early Jan., when the most important factor is light intensity and the photosyntheses conditions are better than at any other period. Reference is also made to the inhibition of growth by an increase of seawater temperature at surface levels, and some experiments on samples enriched with nutrients are described. (Auth.)

J-20065

Morse, J.W., **Dissolution kinetics of calcium carbonate in sea water: VI. The near-equilibrium dissolution kinetics of calcium carbonate-rich deep sea sediments,** *American journal of science,* Mar. 1978 278(3), p.344-353, 18 refs.

The dissolution kinetics of calcium carbonate from calcium carbonate-rich deep-sea sediments collected in the Indian, Pacific, and Atlantic oceans have been studied using a pH-stat technique in natural ocean and pore water. Sediments from different localities have different reaction orders and rate constants. The rate of dissolution per gram of calcium carbonate changes with the extent of dissolution, and different size fractions have different rates of dissolution per unit surface area at equivalent undersaturations. Basic agreement was found between rates of dissolution measured in the laboratory and in the Pacific Ocean water column, when the same size fractions of sediment are used. Dissolution rates in deep-sea sediment pore water are close to those found in deep seawater of similar salinity and phosphate concentration. The sediment used in most runs was obtained from the antarctic core storage facility at Florida State U. (Auth. mod.)

J-20078

Nowlin, W.D., Jr., Whitworth, T., III, Gordon, L.E., Anderson, G.C., **Oceanographic station data collected aboard R/V *Melville* during FDRAKE 75,** *Texas A and M University, College Station. Dept. of Oceanography. Data report,* May 1977, 355p., 11 refs.

This report presents the hydrographic bottle and STD data collected aboard the *Melville*. Procedures used in the collection and reduction of the data are documented. In addition to listings of data and calculated quantities, selected plots and displays are presented. Maps display the locations of hydrographic stations, tide gauges, current meter moorings, and XBT positions.

J-20080

Stuiver, M., Broecker, W.S., **Ageing and circulation of West Atlantic Deep Water,** *World Meteorological Organization. Publication,* [1977] No.421, Long-term climatic fluctuations, WMO/IAMAP Symposium, Geneva, 1975. Proceedings, p.301-310, 10 refs.

DAS, QC851.W6445

The procedure of a study of the aging and circulation of West Atlantic deep water by means of the C-14 method is described, and the results obtained are presented. The aging of the water, as indicated by a reduction in specific C-14 activity, is most pronounced between 56 and 26N, where 240 yr are needed for the decay. Between 26N and 4S, there is only nominal decay; but between 4 and 30S, additional aging of 140 yr occurs. Overall residence time of water between 56N and 30S, when calculated from the specific and total C-14 activities, is, respectively, 340 and 380 yr. The Stommel and Arons model of the abyssal circulation in the North Atlantic agrees with the data obtained, since a large portion of the C-14 decay occurs between 26 and 56N with North Atlantic deep water evidently aging during circulation through the large abyssal gyre before rejoining the western boundary current. The overall residence time of North Atlantic deep water between sinking water near Greenland and joining of the south circumpolar Atlantic water, was found to to be about 400 yr. C-14 analysis of the northward flowing Antarctic bottom water indicates a residence time of 300-400 yr. (Auth. mod.)

J-20081

Mikhaĭlovskiĭ, V.N., Kuksenko, V.I., Nerubenko, S.G., Tymchuk, Kh.K., **Spatial and temporal characteristics of quasi-biweekly fluctuations in tidal force at high latitudes** [Prostranstvenno-vremennye kharakteristiki kvazidvukhnedel'noĭ ritmiki prilivnykh sil v vysokikh shirotakh], *Otbor i peredacha informatsii,* 1977 No.50, p.44-48, In Russian. 6 refs.

DLC TK5102.5.O8

Computer studies show that 2 high-latitude maxima in divergence of horizontal tidal forces of the sun and moon intersect at the 180th meridian and act synchronously and cyclically along loop-shaped trajectories, counterclockwise in the northern hemisphere and clockwise in the southern.

J-20087

Kuroda, K., **Distribution of chlorophyll-*a* contents in the surface water along the course of the *Fuji* to and from Antarctica in 1972-1973,** *Antarctic record,* Mar. 1978 No.61, p.65-74, 13 refs.

Measurements of chlorophyll-*a* and phaeophytin at the surface were carried out by fluorometric methods on board the Fuji from November, 1972, to April, 1973. The chlorophyll-*a* contents were relatively high in the coastal region of Japan, the Makassar Strait, the Subantarctic region, the area from 82 to 104E south of the Antarctic Convergence, the area from 63 to 67S on the meridian of 15E, the area off the southern coast of Africa and the Malacca Strait. The distributional patterns of chlorophyll-*a* obtained by the present investigation were generally similar to those of previous investigations. (Auth. mod.)

J-20098

Hayes, S.P., Zenk, W., **Observations of the Antarctic Polar Front by a moored array during FDRAKE-76,** *U.S. National Oceanic and Atmospheric Administration. NOAA technical report,* Sep. 1977 ERL 390-PMEL 28, 47p., PB-281 460, 10 refs.

Moored current meter and thermistor chain measurements recorded for 28 days near the Antarctic Polar Frontal Zone in the Central Drake Passage are presented. The data indicate that the temperature distribution in the depth interval 200-350 m was essentially

bimodal and that it changed with the position of the front. When the mooring was north of the front, the water was warm and nearly homogeneous. When it was south of the front, the temperature decreased and stratification increased. These results indicate the effectiveness of moored temperature sensors as monitors of frontal movement. (Auth.)

J-20138

Kuksa, V.I., Poiarkov, S.G., **Large-scale characteristics of the distribution of antarctic intermediate waters in the world ocean,** *Oceanology,* Oct. 1977 17(2), p.121-126, 23 refs. Translated from Okeanologiia.

The large-scale characteristics of the formation and distribution of the low-salinity antarctic intermediate waters (AIW) in the World Ocean are established from initial data of the same type. Particular emphasis is placed on a single mechanism for the formation of the AIW and the isopycnic character of the distribution of their properties, which depends in a significant manner on the peculiarities of the hydrologic conditions of the Atlantic, Indian and Pacific Oceans. The role of the horizontal structure of the general circulation of the waters of the ocean in this process is shown. A scheme is suggested to describe the AIW distribution mechanism in the ocean. (Auth.)

J-20161

Carmack, E.C., Killworth, P.D., **Formation and interleaving of abyssal water masses off Wilkes Land, Antarctica,** *Deep sea research,* Apr. 1978 25(4), p.357-369, 16 refs.

Water having anomalously low temperature and salinity characteristics is shown to interleave the voluminous layer of Antarctic Bottom Water west of the Ross Sea along a surface of constant potential density. Mixing relationships suggest this feature is due to sinking along the continental margin of water insufficiently dense to reach the bottom. The hypothesis of local formation is tested using a turbulent plume model that shows formation is possible in this manner and at the depths observed. (Auth.)

J-20162

Smith, N.R., Fandry, C.B., **Combined effects of wind stress and topography in a two-layer model of the Southern Ocean,** *Deep sea research,* Apr. 1978 25(4), p.371-390, 35 refs.

Recent observations for the Southern Ocean suggest that bottom topography may play an important role in the dynamics of the Antarctic Circumpolar Current. In the following paper, a two-layer model of the Antarctic Circumpolar Current is used to assess the importance of Southern Ocean bathymetry. Both barotropic and baroclinic components of the velocity field have a tendency to follow contours of the constant product of depth times absolute value of the Coriolis parameter. If the flow over an isolated ridge is considered, the zonal component is significantly increased over the northern flank, whereas a weak westerly counter-current is induced over the southern portion of the ridge, mainly in the upper layer of the ocean. Behavior at the interface shows many similarities with the observed features of the Antarctic Polar Front. Whereas the interface in a flat-bottomed ocean rises steadily towards the south, a ridge induces the interface to rise sharply over its northern flank and to flatten out over the southern side. This is consistent with the observed behavior of surfaces of constant density in the Southern Ocean. The importance of different wind systems, the beta-effect, and the size of specific ridges are qualitatively assessed. (Auth.)

J-20185

Fiadeiro, M.E., Craig, H., **Three-dimensional modeling of tracers in the deep Pacific Ocean: 1. Salinity and oxygen,** *Journal of marine research,* May 1978 36(2), p.323-355, 27 refs.

A numerical model of the deep circulation using weighted-mean differences in three dimensions has been developed and applied to the distribution of tracers in the Deep Pacific Ocean. It is found that the Stommel-Arons model of the thermohaline circulation applied to the three-dimensional distribution of salinity and oxygen explains reasonably well the general features of these distributions with the following parameters: wh and R for the circulation, Kv and Kh for mixing, and J for the regeneration term. The parameter R represents the deep circulation of the Antarctic Circumpolar Current. The values given for these parameters are relative to the value fixed for Wh.

J-20197

Le Floch, J., Merle, J., **Antarctic Intermediate water in the intertropical Atlantic** [Les eaux Intermédiaires Antarctiques dans l'Atlantique Intertropical], *France. Office de la recherche scientifique et technique outre-mer. Cahiers O. R. S. T. O. M. Série océanographie,* 1975 13(3), p.217-237, In French with English summary. 5 refs.

This paper is an attempt to use all available historical data on the intertropical Atlantic at the level of the Antarctic Intermediate water. The authors first tried to calculate the vertical eddy coefficient of diffusion and then to describe quantitatively the distribution of hydrological properties. The idea of a spatial distribution reflecting the time-dependent variations of salinity and temperature at the "origin" (antarctic convergence) is confirmed. Seasonal variations in the circulation of antarctic intermediate water are also investigated through all the historical data. (Auth.)

J-20203

Foster, T.D., **Polar oceans: similarities and differences in their physical oceanography,** Polar research: to the present, and the future, edited by M.A. McWhinnie, Boulder, Colo., Westview Press, 1978, p.117-140, 30 refs.

The physical oceanography of the polar oceans is compared, and it is found that the Arctic Ocean proper is quite different from the Southern Ocean. The primary causes of this difference are the relative isolation of the Arctic Ocean, which results in nearly permanent ice cover, and the large amount of fresh water runoff from the northern rivers, which causes the upper waters of the Arctic to be very stable. The Greenland Sea bears a closer resemblance to the Southern Ocean and, in particular, to the Weddell Sea in that both have cyclonic circulation, a three-layer structure, and are major source areas for bottom water formation. (Auth.)

J-20229

Leont'eva, V.V., **Pacific Ocean bottom water** [Donnye vody Tikhogo okeana], *Akademiia nauk SSSR. Institut okeanologii. Trudy,* 1976 Vol.99, p.7-19, In Russian with English summary. Refs. p.17-19.

This article gives a short review of modern views about the genesis, characteristics and circulation of Antarctic bottom water in the Pacific. Some data are presented on the benthic layer. (Auth.)

J-20230

Sokolova, M.N., **Large-scale division of the ocean according to trophic structure of deep-sea macrobenthos** [Krupnomasshtabnoe raĭonirovanie okeana po troficheskoĭ strukture glubokovodnogo makrobentosa], *Akademiia nauk SSSR. Institut okeanologii. Trudy,* 1976 Vol.99, p.20-30, In Russian with English summary. Refs. p.28-30.

The effect of the trophic factor on large-scale distributional patterns of deep-sea macrobenthos inhabiting the floor of the World Ocean has been studied. Two hundred and twenty-eight bottom trawl samples collected by Soviet research vessels in the Pacific and

Indian Oceans at depths ranging from 3000 to 6000 m were analyzed. For each sample, the weight of animals with a similar mode of feeding was determined to find the weight ratio of representatives of three main trophic groups, i.e., deposit-feeders, suspension-feeders and carnivores. These data, indicating predominance of alternate groups as well as data on their geographic distribution, were related to feeding conditions which depend on: (1) rates of sedimentation, (2) nature of sediments, (3) content of organic carbon, (4) degree of transformation of organic matter on and within sediments, and, when available, (5) data on redox potential, biochemical oxygen consumption, and state of heterotrophic microflora in the sediments. In dealing with the feeding conditions of deep-sea macrobenthos in the Atlantic Ocean, biological characteristics were deduced from literature data on the composition of sediments, their redox potential and organic carbon content. As a result of this research, eutrophic and oligotrophic regions on the floor of the World Ocean have been distinguished and their boundaries defined. (Auth. mod.)

J-20244

Ichiye, T., **Contributions to the dynamics of the Antarctic Circumpolar Current. 2. Integral relationships,** College Station, Texas A and M Univ., Aug. 1975, 31p., ADA-014 506, 18 refs.

Non-dimensional equations of motion are derived for the A.C.C. of the barotropic mode, including the bottom friction and the horizontal eddy viscosity. Integration of the vorticity equation leads to the zeroth order stream function which is dependent only on depth divided by Coriolis' parameter. Integration of the momentum equation along a streamline yields the relation between the momentum input by wind stress and its dissipation by the bottom friction and by the horizontal eddy viscosity. The relation determines the magnitude of the stream function. It also explains differences in the total transport of the A.C.C. obtained by Kamenkovich (1962) and by Bryan and Cox (1972). The value of about 130,000,000 tons/sec by the former is mainly due to a high value of the vertical eddy viscosity near the bottom. With 1 sq cm/sec of the latter, Bryan and Cox obtained the transport of about 650 or less than 32,000,000 tons/sec for constant or variable depth models, respectively. The higher transport is mainly due to broadening of the width of the A.C.C., whereas the lower value is due to its narrowing and meandering which, in turn, makes the horizontal eddy viscosity more effective (by exercising friction on both sides of the A.C.C.) and the wind stress input smaller than the almost zonal streamlines for constant depth. (Auth.)

J-20248

Platzman, G.W., **Normal modes of the World Ocean. Part I. Design of a finite-element barotropic model,** *Journal of physical oceanography,* May 1978 8(3), p.323-343, 26 refs.

The linearized primitive equations for a barotropic world ocean are discretized by means of first-order, piecewise-linear finite elements. Surface elevation and Stokes/Helmholtz velocity potentials are adopted as dependent variables. On any segment of the ocean boundary, specification of elevation and simple radiation are allowed as alternative conditions. The discretized mass and momentum equations are designed to make the finite-element solution satisfy global energy balance exactly. They also permit an arbitrary choice of axes at each node of the grid and thereby avoid the "pole" problem. The model is tested by applying it to a rotating rectangular basin and to a domain consisting of the Atlantic and Indian Oceans. Comparison of finite-element and finite-difference models of the Atlantic/Indian domain shows all calculated vorticity modes to be associated with one of four major topographic features: the north slope of the North Atlantic Ocean, the Patagonian Shelf/Scotia Ridge complex, the Kerguelen Plateau and the Antarctic Slope.

J-20249

Kuo, H.-H,, **Topographic effect on the deep circulation and the abyssal oxygen distribution,** *Journal of physical oceanography,* May 1978 8(3), p.428-436, 25 refs.

Strommel's model for deep circulation of the World Ocean is extended to include the effect of bottom topography. Bottom friction is introduced to dissipate the vorticity which is generated by stretching of the water column due to upwelling. The steady linearized equations governing the flow were solved for the World Ocean with actual bottom relief and coastline. The topographic flow of the World Ocean is then used in the advection-diffusion-decay equation to examine the effect of the topography on the abyssal oxygen distribution. The resulting topographic flow is quite different from the circulation with a flat bottom, particularly in the Antarctic region. The Antarctic Circumpolar Current obtained here gives the essential feature that the current bends toward the equator when approaching a shallow area and toward the pole after crossing it. The distribution of abyssal oxygen is characterized by the topographic flow. The contours of the oxygen concentration in the Antarctic Ocean resemble the streamlines of the flow. When the advection process is larger than diffusion, the interior distribution of oxygen also shows the influence of the mid-ocean ridges and the Hawaiian Islands. (Auth.)

J-20270

Eadie, B.J., Jeffrey, L.M., **C-13 change analysis of oceanic particulate organic matter,** College Station, Texas A and M Univ., Jan. 1973, 11p., ADA-005 938, Refs. p.208-209.

Seventy-nine C-13 change analyses of particulate matter from semitropical (Gulf of Mexico, Caribbean and Atlantic) and polar (South Indian Ocean) waters showed that the carbon isotope composition of the particulate matter from the cold polar surface waters was lighter (-24.7 to -26.0%) than that from the surface in the semitropical regions (-19.8 to -22.3%), reflecting the temperature effect on the photosynthetic fixation of carbon. C-13 changes for deep samples were generally more negative than the surface samples, except in some well-mixed polar areas. A difference both in organic carbon isotopic composition and percentage organic carbon in the POM and the tops of sediment cores was also apparent, a loss of approximately 95% of incoming carbon and an increase in C-13 of several per mille being observed during deposition of particulate matter. This indicates that after settling on the bottom there is extensive diagenesis of the POM by organisms indicating the non-refractory nature of the organic matter. (Auth.)

J-20327

Buĭnitskiĭ, V.Kh., ed, Ostrekin, M.E., ed, **Seventh voyage of the R/V *Ob'***, Jerusalem, Israel Program for Scientific Translations, 1968, 218p., TT 68-50312, Translation of Sovetskaia Antarkticheskaia Ekspeditsiia. Trudy, 44:1965. For individual articles see E-20339 through E-20341, F-20329 through F-20333, F-20336, F-20337, G-20334, G-20343, I-20342, J-20328, J-20335, and J-20338. Numerous refs.

The 16 papers comprising the report of the 7th cruise of the *Ob'* in antarctic waters are translated here. Seven of the articles relate to sea and shore ice—distribution, formation, physics, destruction, effect of diatoms on structure. Site selection and organization for the station destined to be Molodezhnaya are discussed in three papers. Structure and geomorphology of Enderby Land are the topics of two more papers, and geodetic and hydrographic work done in the Alasheyev Bight account for two.

J-20328
Shamont'ev, V.A., **Brief description of the voyage of the *Ob'* and results of oceanographic work during the seventh Antarctic Expedition,** Seventh voyage of the R/V Ob'.1961-1962, Jerusalem, Israel Program for Scientific Translations, 1968, p.1-20, TT 68-50312, For Russian original see 3F-4101.

Extensive hydrographic and hydrologic studies were conducted offshore near Molodezhnaya Station. Work of the marine division on the *Ob'* while underway included echo soundings, surface and depth hydrological observations, ice observations, radar location of icebergs, and meteorological observations; marine gravimetric studies were undertaken, and coastal hydrologic observations and echo soundings from the ice were conducted in Alasheyev Bight. A numerical breakdown is given of the types of hydrologic studies conducted, data on surface salinity and temperature are tabulated.

J-20335
Shamont'ev, V.A., **Tidal observations in the region of Molodezhnaya Station,** Seventh voyage of the R/V Ob',.1961-62, Jerusalem, Israel Program for Scientific Translations, 1968, p.107-115, TT 68-50312, For Russian original see 3J-4108.

Observations were conducted from Jan. 16 to Feb. 10, 1962, on the tidal oscillations at the southern coast of Alasheyev Bight in relation to selection of a site for the new station, Molodezhnaya. Tide measurements were recorded using a tide staff and a tide gage. Mean sea level was calculated; harmonic and nonharmonic tidal components and elements of the tropical tide are listed. Results of tide staff observations, hourly sea level readings from the tide gage, and the time and height of high and low tides are appended. The tides in this area are similar in character and magnitude to those at Mirnyy and Lazarev Stations.

J-20338
Mal'tsev, V.N., **Hydrographic investigations of approaches to the Antarctic station Molodezhnaya,** Seventh voyage of the R/V Ob',.1961-62, Jerusalem, Israel Program for Scientific Translations, 1968, p.147-151, TT 68-50312, For Russian original see 3J-4111.

Hydrographic studies were made from Jan. to March, 1962, in Alasheyev Bight to study the bottom relief along the coast in the Molodezhnaya Station region, to determine a safe route for the *Ob'* and to find a suitable natural mooring for freight handling. The offshore relief of the Molodezhnaya area is described. Tidal oscillations in the bight were observed, and control was established for future hydrographic work. Depth studies were made of the lakes near the station to determine their fresh water reserves.

J-20413
Whitworth, T., Nowlin, W.D., Jr., Gordon, L.I., Anderson, G.C., **Oceanographic data collected aboard R/V *T.G. Thompson* during FDRAKE 76, Legs I and II,** *Texas. A and M University, College Station. Dept. of Oceanography. Data report,* Jan. 1978 Ref. 78-1-D, 245p., 8 refs.

The second phase of the First Dynamic Response and Kinematics Experiment (FDRAKE) 76 was conducted in three legs from Punta Arenas, Chile aboard the R/V *T.G. Thompson.* During the first leg, the year-long array of current, temperature and pressure recorders deployed during FDRAKE 75 was recovered and a replacement array was installed. Twenty-five hydrographic/STD stations were occupied across the Passage and in the vicinity of the new array. The second leg was devoted to a closely-spaced hydrographic/STD section across the Passage 25 km east of the moored array. Nominal station spacing on this section was 50 km except within the Polar Frontal Zone where stations were made every 25 km. Two stations were occupied in the western end of the deep trough at the southern end of the Passage, and a short east-west section was made in the central Passage. Leg three was a detailed study of the Antarctic Polar Front and is reported in Joyce, et al. (1976). This report presents listings and plots of hydrographic bottle and STD data.

J-20445
Stepanov, V.N., **Diagnostic calculations of world ocean horizontal circulation** [Diagnosticheskie raschety gorizontal'noĭ tsirkuliatsii vod Mirovogo okeana], *Morskie gidrofizicheskie issledovaniia,* 1977 No.1(76), p.34-46, In Russian with English summary. 8 refs.

Based on the linear-diagnostic model, horizontal circulation in the entire water column of the ocean is calculated, using yearly average values of density field and components of tangential wind direction. In doing so, bottom topography and coastal configuration were also taken into account. (Auth.)

J-20446
Plakhotnik, A., **Large-scale circulation of the world ocean** [Velichaĭshee techenie mirovogo okeana], *Morskoĭ sbornik,* Mar. 1977 No.3, p.81-83, In Russian.

This article is an overview of the present understanding of the currents and circulation patterns of Southern Ocean water. It describes the various currents—Antarctic Circumpolar and its branches such as the Falkland—shows their locations on a small map, and discusses their rates of flow and water volume. Brief reference is made to some of the more recent expeditions that have investigated Southern Ocean dynamics, especially the problem of vertical structure.

J-20506
Schink, D.R., Guinasso, N.L., Jr., Fanning, K.A., **Processes affecting the concentration of silica at the sediment-water interface of the Atlantic Ocean,** *Journal of geophysical research,* July 20, 1975 80(21), p.3013-3031, 81 refs.

A model for interstitial silica concentrations is derived, incorporating biological mixing of sediments. This model predicts concentrations and gradients and can account for the observed geographical variations in interstitial silica on the basis of a dynamic balance between solution of silica particles and diffusion from the sediments. The flux of particulate biogenous silica into the sediments is confirmed as an important parameter controlling interstitial silica concentrations. Biological mixing of sea floor sediments also has an important influence on interstitial composition by modifying the depth at which dissolving particles react. Faster mixing raises the interstitial concentration. The rate at which siliceous particles dissolve also plays a role; the slower they dissolve, the greater the interstitial silica concentration. Measurements on near-bottom waters of the Atlantic show no consistent gradients in dissolved silica, but antarctic bottom water seems significantly more variable in the benthic boundary layer than in the water mass above or in the benthic zone of North Atlantic deep water. (Auth.)

J-20508
Hobart, M.A., Bunce, E.T., Sclater, J.G., **Bottom water flow through the Kane Gap, Sierra Leone Rise, Atlantic Ocean,** *Journal of geophysical research,* Dec. 20, 1975 80(36), p.5083-5088, 20 refs.

Continuous seismic profiling, detailed temperature versus depth measurements, heat flow measurements, and a bottom photograph in the Kane Gap on the Sierra Leone Rise in the Atlantic Ocean suggest that a bottom current of cold water flows along the floor of the gap. The layer of cold water is 320 m thick and is marked by a large temperature gradient at the top. The layer is nearly isothermal at

2.28C, which is 0.12C colder than the water 500 m off the bottom. The data suggest a three-step depositional history: (1) erosion of a sequence of thick, dipping sediments, (2) deposition of flat-lying sediments, and (3) erosion of small channels in flat-lying sediments. It is not possible to determine conclusively the velocity or direction of flow of the bottom current. The bottom photograph suggests flow to the north. This current probably reflects the effects on eastern basin circulation of the crossing of Antarctic bottom water through the Mid-Atlantic Ridge at either the Romanche fracture zone or the Vema fracture zone. (Auth. mod.)

J-20517

Gordienko, P.A., Al'tman, L.P., **Problems of exploitation and conservation of the ocean** [Aktual'nye problemy ispol'zovaniia i okhrany mirovogo okeana], Leningrad, Znanie, 1977, 31p., In Russian. 15 refs.

This pamphlet is an overview of the decisions of the 25th Party Congress regarding the planned development of the Soviet merchant and fishing fleets. Expanded efforts are envisioned in a number of areas, all of which are directly or indirectly dependent on the size and efficiency of ocean-going ships: fishing; gas and oil extraction, especially on continental shelf areas; tourism; oceanographic research; and arctic shipping. A short history of shipping and icebreaking in polar waters is provided.

J-20518

Scripps Institution of Oceanography, **Physical and chemical data. *Piquero* Expedition 16 December 1968-16 April 1969,** La Jolla, California, 1974, 62p., ADA-002 328, 10 refs.

The primary purpose of the *Piquero* expedition was the following: (1) to obtain more data on noble gas concentrations, mainly on the excess helium component present in deep southeast Pacific waters attributable to an influx of helium from the solid earth; (2) to conduct a sub-bottom (air gun) profiler survey of a possible extension of the Atacama fault on the continental shelf near Taltal, Chile; (3) to study the circulation of the Chile current between 40 degrees S and 57 degrees S and of the antarctic circumpolar current in the area between Cape Horn and the Antarctic Peninsula; and (4) to study the distribution of plankton in relation to prevailing hydrographic conditions and concentrations of nutrient chemicals in coastal and oceanic waters of western South America. (Auth.)

J-20519

Schink, D.R., Guinasso, N.L., Jr., Fanning, K.A., **Processes affecting the concentration of silica at the sediment-water interface of the Atlantic Ocean,** College Station, Texas A & M University, Sep. 1974, 19p., ADA-014 453, 81 refs.

A model for interstitial silica concentrations is derived, incorporating biological mixing of sediments. This model predicts concentrations and gradients and can account for the observed geographical variations in interstitial silica on the basis of a dynamic balance between solution of silica particles and diffusion from the sediments. The flux of particulate biogenous silica into the sediments is confirmed as an important parameter controlling interstitial silica concentrations. Biological mixing of sea floor sediments also has an important influence on interstitial composition by modifying the depth at which dissolving particles react. Faster mixing raises the interstitial concentration. The rate at which siliceous particles dissolve also plays a role; the slower they dissolve the greater the interstitial silica concentration. Measurements on near-bottom waters of the Atlantic show no consistent gradients in dissolved silica, but Antarctic Bottom Water seems significantly more variable in the benthic boundary layer than in the water mass above or in the benthic zone of North Atlantic deep water. (Auth.)

J-20523

Scripps Institution of Oceanography, **Physical and chemical data from the Nemo Expedition in the Ross Sea aboard USCGC *Northwind* (ice breaker) 2-23 February 1972,** La Jolla, California, 1974, 29p. ADA-000 799.

The purpose of the USCGC *Northwind*'s work was to measure the characteristics of the deep water in the western end of the southeast Pacific Basin (71 degrees S to 75 degrees S and 140 degrees W to 170 degrees W) in order to determine whether bottom water formed in the Ross Sea flows into the basin. (Auth.)

J-20532

Sievers, H.A., Emery, W.J., **Variability of the antarctic polar frontal zone in the Drake Passage—summer 1976-1977,** *Journal of geophysical research,* June 20, 1978 83(C6), p.3010-3022, 12 refs.

Expendable bathythermograph, wind, and sea surface temperature data collected along 12 crossings of the Drake Passage were analyzed to describe variations in the structure of the antarctic polar frontal zone within a single austral summer (1976-1977). Collected from icebreakers, research and supply vessels traveling to and from the Antarctic, these data show the development of cold features within the antarctic polar frontal zone, which are most likely expressions of eddies or meanders formed at the polar front. These cold features appear to widen the antarctic polar frontal zone by intensifying the subantarctic front and moving it to the north. The majority of the temperature sections contain such cold features, whose signature can be identified as an inflection in average profiles of 450-m heat content and sea surface temperature. Changes in air temperature and wind direction over the antarctic polar frontal zone observed when cold features are present may reflect the influence of the ocean on the overlying atmosphere. (Auth.)

J-20533

Gordon, A.L., Molinelli, E., Baker, T., **Large-scale relative dynamic topography of the Southern Ocean,** *Journal of geophysical research,* June 20, 1978 83(C6), p.3023-3032, 41 refs.

The large-scale or climatic distribution of relative dynamic topography south of 30S, using a selective set of hydrographic stations, indicates significant deviations from a purely latitudinal dependence of the isopleths. The geostrophic flow relative to 1000-dbar level shows the Antarctic Circumpolar Current to vary greatly in its intensity and latitude during its course around Antarctica. High-intensity flow occurs over the northern slope of the midocean ridge from 105E eastward to the fracture zones near 145W, significant perturbations being introduced in the vicinity of the Macquarie Ridge and Campbell Plateau. A strong expression of the Antarctic Circumpolar Current is found in the Drake Passage downstream of weak baroclinicity in the southeast Pacific. East of the Drake Passage strong meridional trends of the dynamic height isopleths occur with significant latitudinal offset of the main axis of geostrophic flow. The dynamic height anomaly to the south of the main circumpolar current indicates the presence of weak baroclinic gyres in the western Weddell Basin and to the north and northeast of the Ross Sea, and much meridional trend of the isopleths over the southeastern flank of the Kerguelen Plateau. North of the main circumpolar flow, dynamic height anomaly also indicates weak baroclinicity, though a relatively strong axis of northward geostrophic flow occurs over the eastern flank of Campbell Plateau. (Auth. mod.)

J-20553

Savchenko, V.G., Emery, W.J., Vladimirov, O.A., **Cyclonic eddy in the Antarctic Circumpolar Current south of Australia: results of Soviet-American observations aboard the R/V *Professor Zubov*,** *Journal of physical oceanography,* Sep. 1978 8(5), p.825-837, 17 refs.

Hydrographic, expendable bathythermograph and 16-day current meter records are combined to describe the oceanic structure south of Australia between Jan. 24 and Mar. 1, 1977. A strong cyclonic eddy, containing Antarctic Surface Water from south of the Polar Front, is found to the south of and combined with a meander of the Subantarctic Front. Current meters moored in and north of the eddy indicate deep flow to the west, suggesting anticyclonic circulation below 2000 m. Three thermal surveys along with current meter records document the north-northeastward movement of the eddy at an average speed of 3 cm/s. Directly measured zonal currents were highly coherent in the vertical and showed significant spectral peaks at a period of 2 days. Daily mean measured currents are shown to be highly geostrophic, and geostrophic transports (relative to the bottom) give a net eastward transport through the section along 13E of 165 x 1,000,000 cu m/s.

J-20579

Eadie, B.J., Jeffrey, L.M., Sackett, W.M., **Some observations on the stable carbon isotope composition of dissolved and particulate organic carbon in the marine environment,** *Geochimica et cosmochimica acta,* Aug. 1978 42(8), p.1265-1269, 17 refs.

Delta-13 CPDB compositions for 39 samples of dissolved organic carbon (DOC) from the Gulf of Mexico-Caribbean Sea-Atlantic Ocean system, the South Pacific and Ross Sea are reported. Deep water values are similar with a mean of -2.18 per mille attesting to the homogeneity of the oceanic DOC pool. In Antarctic waters, a 5 per mille difference between DOC and particulate organic carbon (POC), with POC having values similar to modern plankton (delta-13 CPDB approx -27 per mille) supports the idea of the transient nature of POC as compared to DOC. Total, lipid, acid hydrolyzed, amino acid and residue fractions of POC are about 5, 3, 7, 5 and 3 per mille, respectively, more negative in 2000 m water as compared to surface water samples from the Gulf of Mexico. (Auth.)

J-20589

Antarctic research ship [Antarktiese navorsingskip], *Scientiae,* Apr.-June 1978 19(2), p.19, In Afrikaans with English summary.

The antarctic research ship *SA Agulhas,* built to replace South Africa's former antarctic relief ship *RSA,* recently sailed on its maiden voyage to Marion I. to transport a team of scientists. Launched in Japan in Sep. 1977, the vessel is specially reinforced to withstand pack ice, contains a number of research laboratories, has a heliport for two helicopters, and can accommodate 138 people.

J-20594

Hsu, K.J., **Messinian salinity crisis: evidence of Late Miocene eustatic changes in the world ocean,** *Naturwissenschaften,* Mar. 1978 65(3), p.151, 2 refs.

Two major discoveries made by the deep-sea drilling during the last decade were the discovery of the Late Miocene desiccation of the Mediterranean Sea and the Late Miocene glacial advance of the Antarctic. The coincidence in timing suggests a causal connection between the two. (Auth.)

J-20598

Mackie, P.R., Platt, H.M., Hardy, R., **Hydrocarbons in the marine environment. 2. Distribution of *n*-alkanes in the fauna and environment of the subantarctic island of South Georgia,** *Estuarine and coastal marine science,* Mar. 1978 6(3), p.301-313, Refs. p.312-313.

The concentrations and distributions of alkanes have been determined in samples of sediment, fish, benthos and a land plant mixture from King Edward Cove, South Georgia. The fish muscle and water samples exhibited the relatively smooth envelope typical of this type of materials, whereas the plants, benthos, fish liver and sediments had a strong odd carbon predominance. No trace of fuel oil from previous spills or leaking storage tanks could be found in any of the samples examined, although possible evidence of wastes from the whaling station were found in the deepest sediment layers in the centre of the Cove. (Auth.)

J-20605

Stepanov, V.N., **Water density field of the world ocean,** *Oceanology,* Apr. 1978 17(5), p.512-515, Translated from Okeanologiia, 17(5):1977. 5 refs.

New information on density fields has been obtained and displayed by averaging all the thermohaline data collected at oceanographic stations. This has made it possible to trace in detail the characteristics of the restructuring of the density field in the World Ocean. (Auth.)

J-20617

Deacon, G.E.R., **Seasonal and annual variations in water temperature and salinity near South Georgia, 1925-1937,** *Great Britain. Institute of Oceanographic Sciences. IOS Report,* 1977 No.49, 21p. + graphs, 9 refs.

DAS,H GC1.G76

Seasonal and annual variations in water temperature and salinity near South Georgia were recorded on a fairly regular basis by whaling and fishing vessels. Those data are reproduced here and a correlation is sought between cold, low-salinity water and abundance of krill, always a precursor of large whale congregations. Although the figures are incomplete and rough, correlations do appear to confirm the larger numbers of krill in Weddell Sea water.

J-20634

Treshnikov, A.F., Sarukhanian, E.I., Smirnov, N.P., **Main results of observations under the POLEX-South program in the Drake Passage (1975-76) and prospects for further Southern Ocean research** [Osnovnye rezul'taty nabliudeniĭ po programme "POLEKS-IUG" v prolive Dreĭka v 1975 i 1976 gg. i perspektivy dal'neĭshikh issledovaniĭ v IUzhnom okeane], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1978 Vol.345, p.12-23, In Russian. 5 refs.

The main results of 1975-76 Soviet observations in the Drake Passage in connection with their study of the spatial and temporal structure of the Antarctic Circumpolar Current and the Antarctic Polar Front, water masses in the Passage, summer atmospheric processes and ocean-atmosphere energy exchange features are presented. Problems requiring further research are formulated on the basis of these findings. One proposal is for a full-scale international experiment on energy balance in the Atlantic sector of the Southern Ocean.

J-20635

Treshnikov, A.F., Alekseev, G.V., Sarukhanian, E.I., Smirnov, N.P., **Studying Southern Ocean circulation** [K probleme izucheniia tsirkuliatsii vod IUzhnogo okeana], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1978 Vol.345, p.24-38, In Russian. 47 refs.

The most significant characteristics of Southern Ocean circulation are discussed: the presence of the powerful Antarctic Circumpolar Current, the existence of the clearly defined Antarctic Polar Front, coastal formation of cold bottom waters which are included in the meridional circulation patterns. On the basis of theoretical results, models and full-scale observations, conclusions about the nature of the Antarctic Circumpolar Current and the Antarctic Polar Front, their fluctuations, the role of meridional circulation in the Southern Ocean,

water dynamics, the existence of cross-currents and the mechanisms of bottom-water formation are drawn.

J-20636
Zykov, I.D., Oliunin, IU.V., Sarukhanian, E.I., Smirnov, N.P., **Horizontal circulation in the Drake Passage** [Gorizontal'naia tsirkuliatsiia vod v prolive Dreĭka], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1978 Vol.345, p.39-46, In Russian. 10 refs.

Structure of the Drake Passage currents is discussed on the basis of absolute dynamic topography charts. Estimated flow rates are compared with those recorded by oceanographic buoys. Current structure is concluded to be spatially complex and to manifest a series of separate currents and marked intersections and meanderings. It is demonstrated that throughout the upper layer (0-2500m) the general direction is northeastward. The lower layer (3000-3500m) is characterized by a weak bottom flow westward; this is verified both by modelling and by buoy readings.

J-20637
Alekseev, G.V., Zykov, I.D., Oliunin, IU.V., Smirnov, N.P., Timachev, V.F., **Current measurement by means of buoys in the Drake Passage** [Nabliudeniia za techeniiami s pomoshch'iu ABS v prolive Dreĭka], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1978 Vol.345, p.47-55, In Russian. 9 refs.

Spectral analysis of observations by two oceanographic buoys was done to study Drake Passage currents. Progressive vector diagrams of flow at various depths, ellipses of 12 and 24-hr circulation patterns and ellipses and timespan of inertial flow are presented. Vertical current structure is discussed. Large-scale perturbations, of 4 days or longer, appear to play a significant role in Antarctic Circumpolar Current dynamics.

J-20639
Alekseev, G.V., Afanas'ev, B.V., Ivanov, N.I., Oliunin, IU.V., **Observations of water temperature variations in the Drake Passage, summer 1976** [O nabliudeniiakh za kolebaniiami temperatury vody v prolive Dreĭka letom 1976 g.], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1978 Vol.345, p.63-69, In Russian. 3 refs.

Spectral analysis of water temperature for consecutive time periods in the top 300-m layer of the Antarctic Circumpolar Current was conducted and the results are presented. Both photothermographic and bathymetric sounding data are included. It is apparent that there are basic energy-yielding frequencies for water-temperature variations. The authors suggest a probable mechanism for development of advective temperature fluctuations.

J-20640
Kravchuk, M.A., Romantsov, V.A., Smirnov, N.P., **Drake Passage water masses in the summer** [Vodnye massy proliva Dreĭka v letniĭ period], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1978 Vol.345, p.70-82, In Russian. 15 refs.

Multidimensional analysis and classification of Drake Passage water masses in summer were done on the basis of data gathered in Jan. and Feb. 1976 by the *Professor Vize*. Six types of water were identified and are described: subantarctic (surface and subsurface), antarctic (surface and subsurface), antarctic deep, and antarctic bottom. Statistical parameters and mean characteristics of each are given. Zonal nonhomogeneity and meridional differences in water characteristics and the spatial distribution in relation to the Antarctic Circumpolar Current and to atmospheric circulation features are analyzed.

J-20641
Levenchuk, IU.A., Fedorov, K.P., **Phosphate content in Drake Passage water** [O soderzhanii fosfatov v vodakh proliva Dreĭka], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1978 Vol.345, p.83-85, In Russian. 4 refs.

An analysis of phosphate content in the waters of the southern portion of the Drake Passage was carried out, based on material from the 24th voyage of the *Professor Vize* and the *F. Drake-75*. The data are compared and a convergence of maximum phosphate concentration and minimum oxygen values in the 250-1500-m layer is noted. An hypothesis accounting for this phenomenon is offered.

J-20645
Vasil'ev, V.F., Vladimirov, V.O., Kislitsyn, S.P., **Features of radiation balance at the water surface in the Drake Passage, summer 1976** [Kharakteristika radiatsionnogo balansa na poverkhnosti okeana v prolive Dreĭka letom 1976 g.], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1978 Vol.345, p.116-121, In Russian. 3 refs.

An attempt is made to calculate the components of radiation balance at water surface in the Drake Passage in the summer of 1976. The role of each factor is evaluated. The radiation-inhibiting effect of cloud cover is discussed and the observed results compared with long-term mean values for the area.

J-20649
Alekseev, G.V., Afanas'ev, B.V., Zykov, I.D., Smirnov, N.P., **Thermal structure of antarctic continental slope waters around Molodezhnaya Station** [Termicheskaia struktura antarkticheskikh vod nad materikovym sklonom v raĭone stantsii Molodezhnoĭ], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1978 Vol.345, p.138-141, In Russian. 3 refs.

Temperature sounding data are used to characterize the thermal structure and dynamics of continental shelf waters. It is proposed that antarctic bottom water is formed by internal waves breaking on the slope. To verify this hypothesis, studies on profiles along the slope and shelf are needed.

J-20650
Zykov, I.D., Kravchuk, M.A., Oliunin, IU.V., Potapov, V.A., Romantsov, V.A., **Water mass structure and geostrophic currents on the Antarctica-Africa profile** [Struktura vodnykh mass i geostroficheskie techeniia na razreze Antarktida-Afrika], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1978 Vol.345, p.142-151, In Russian. 13 refs.

The main component method is used to analyze water masses and structure of geostrophic currents between Africa and Antarctica. Geostrophic currents are calculated along a 3000 dbar surface. Estimated values for Antarctic Circumpolar Current flow are compared to earlier results.

J-20676
Treshnikov, A.F., Sarukhanian, E.I., Smirnov, N.P., **Results and prospects of Soviet research in the Southern Ocean** [Itogi i perspektivy sovetskikh issledovaniĭ v IUzhnom okeane], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten',* 1978 No.97, p.58-73, In Russian. 32 refs.

Main results of Soviet research in the Southern Ocean are summarized under three subheadings: the Antarctic Polar Front, water masses, and ocean-air interaction. Further studies are planned in the following areas: large-scale ocean-atmosphere interaction and energy exchange; temporal and spatial variability of the Antarctic Circumpolar Current and the Antarctic Polar Front; polygonal studies in the frontal zone; meridional circulation studies; research into bottom water formation; and research into the peripheral waters.

J-20706

Legeckis, R., **Survey of worldwide sea surface temperature fronts detected by environmental satellites,** *Journal of geophysical research,* Sep. 20, 1978 83(C9), p.4501-4522, 55 refs.

The recent improvement of infrared scanners on the polar and geostationary environmental satellites operated by the National Oceanic and Atmospheric Administration has enabled the detection of many sea surface temperature fronts associated with ocean currents and upwelling. The present capabilities and limitations of these satellites in ocean applications are summarized. Examples of infrared imagery are used to illustrate the horizontal temperature distribution at the ocean thermal fronts. It is postulated that future improvements in satellite systems will increase further our capability to detect ocean fronts. Ice conditions and sea surface temperature fronts in the Ross Sea, Weddell Sea and Drake Passage are described. (Auth. mod.)

J-20707

Taylor, H.W., Gordon, A.L., Molinelli, E., **Climatic characteristics of the Antarctic Polar Front Zone,** *Journal of geophysical research,* Sep. 20, 1978 83(C9), p.4572-4578, 35 refs.

The thermal structures for the upper 500 m presented in four long meridional sections across the subantarctic and antarctic regimes of the Southern Ocean display a number of similar features as well as some differences. The similarities are associated with the latitudinal variation of depth and temperature of the temperature minimum (T min) layer and the common occurrence of much vertical relief of isotherms north of the polar front, which is believed to reflect the presence of transient features, such as meanders and eddies. The differences seem to be related to the details of the thermal structure of the polar front, the continuity of the T min layer at its northern extent, and the presence of strong thermal fronts north of the polar front. The front is not locally generated. The sea-air heat flux in the vicinity of the front reverses the large-scale trend of increased heat loss of the ocean as latitude increases. Northward Ekman drift of surface waters is near the circumpolar maximum at the polar front, which means that the front divides the convergence region to the north from the divergence region to the south. The Antarctic Polar Front is quite similar to the Subantarctic Front of the North Pacific in nearly all respects. (Auth. mod.)

J-20708

Georgi, D.T., **Fine structure in the Antarctic Polar Front Zone: its characteristics and possible relationship to internal waves,** *Journal of geophysical research,* Sep. 20, 1978 83(C9), p.4579-4588, 21 refs.

Temperature and salinity data from a repeated salinity-temperature-depth station and temperature profiles from three expendable bathythermograph experiments are used to investigate both the spatial and the temporal characteristics of fine structure observed in the Antarctic Polar Front Zone. The fine structure was found to evolve considerably on time scales of 1 hour and less. From an experiment designed to elucidate the spatial scales of the fine structure, a marked anisotropy was revealed, suggesting that the temperature structures were elongated filaments aligned with the front. The data were also used to investigate the possibility that internal waves generate the observed fine structure. It is hypothesized that the low-frequency nearly horizontal internal wave motions are generating the observed fine structure. However, in the particular case where direct observations of the vertical motions of internal waves are available, assuming that the relationship between vertical and horizontal displacements prescribed by the Garrett and Munk (1975) model holds, horizontal displacements are ruled out as the sole source of the observed fine structure, yielding neither enough total variance nor the expected spectral shape; thus much of the observed variability may be attributed to temperature fine structure of noninternal wave origin. (Auth. mod.)

J-20709

Johnson, J.A., **Model of narrow jets in a zonal ocean,** *Journal of geophysical research,* Sep. 20, 1978 83(C9), p.4657-4658, 3 refs.

The model illustrates the interaction between zonal jets associated with topography and with temperature fronts in the Southern Ocean. In general, the effect of stratification is to enhance the eastward flow on the equatorward side of a zonal ridge. (Auth. mod.)

J-20710

Kullenberg, G., **Light-scattering observations in frontal zones,** *Journal of geophysical research,* Sep. 20, 1978 83(C9), p.4683-4690, 11 refs.

Light-scattering measurements in three different frontal zones are presented, namely in the coastal upwelling areas outside northwest Africa and central Peru and in the open ocean Antarctic Polar Front in Drake Passage. The observations were made with *in situ* instrumentation, reaching depths of 1000 m, in conjunction with CTD profiles, in repeated sections across the frontal zone. The scattering distributions, giving the distribution of suspended matter, are compared with the temperature distributions. In the African upwelling region there was good correspondence between these two distributions. Frontal zones were present over the shelf break and slope. Across the polar front a markedly layered structure was observed with a clear correspondence between temperature and scattering. The cold water south of the front contained more scattering material than the warm water north of the front. The layers could be traced across the front. In addition, several distinct patches of high and low scattering were observed in the vicinity of the front, indicating mixing across the front. The results show that scattering observations can reflect processes occurring in frontal zones and that it is useful to include such observations in programs aimed at elucidating various physical, chemical, and biological processes in frontal zones.

J-20721

Spichkin, V.A., Shamont'ev, V.A., **Characteristics of tidal phenomena in bays in the Schirmacher Ponds** [Kharakteristika prilivnykh iavleniĭ v morskikh zalivakh oazisa Shirmakhera], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten',* 1978 No.98, p.27-34, In Russian. 14 refs.

Although a number of studies of tides have been done by Soviet workers in the past, they were always indirect measurements, that is, measurements of the changes in ice position rather than in water level per se. In this study a device was developed that registered the changes in water level. The installation was used to gather tidal data in the Novolazarevskaya Station area for a period of 88 days. The results were analyzed by computer and harmonic wave constants revealed.

J-20740

Denisov, A.S., Myznikova, M.N., **Features of the oceanographic regime in Prydz Bay (Feb. 1973)** [Osobennosti gidrologicheskogo rezhima v zalive Priuds (fevral' 1973 g.)], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1978 Vol.68, p.100-105, In Russian. 6 refs.

Ice and oceanological conditions in the Prydz Bay in February 1973 were studied by the *Professor Zubov.* Sea ice distribution, chemistry, temperature, salinity, and circulation of the water in the bay are analyzed.

J-20784

Gonfiantini, R., **Standards for stable isotope measurements in natural compounds,** *Nature,* Feb. 9, 1978 271(5645), p.534-536, 4 refs.

In order to improve the intercalibration of deuterium and O-18 measurements in natural waters, two water standards have been distributed by the International Atomic Energy Agency since 1968. The two standards, called V-SMOW (Vienna Standard Mean Ocean Water) and SLAP (Standard Light Antarctic Precipitation), were prepared in 1966. V-SMOW was obtained by mixing distilled ocean water with small amounts of other waters in order to bring its isotopic composition as close as possible to that of the defined SMOW. SLAP was obtained by melting a sample firn collected at Plateau Station. The deuterium and O-18 intercalibration results relative to V-SMOW and SLAP, together with two NBS water standards, are presented. It is recommended that all future results be expressed as delta-values relative to V-SMOW. Samples of a third water standard, called GISP (Greenland Ice Sheet Precipitation) will soon be distributed. A list of compounds and the elements for which standards can be used is provided.

J-20787

Premchand, K., Sastry, J.S., **Hydrological characteristics and transequatorial transport in the west Indian Ocean,** *Indian journal of marine sciences,* Dec. 1976 5(2), p.169-178, 12 refs.

Analysis of the distribution of temperature, salinity, thermosteric anomaly and dissolved oxygen from data collected by R.V. *Atlantis-II* in the southwest Indian Ocean has revealed the following features: the salinity minimum of the Antarctic Intermediate Water progressively increases from $<3.45\%$ at 26S to $>3.48\%$ at about 10S, and the thickness of the salinity minimum layer increases towards the north. The salinity minimum is conspicuously absent over most of the equatorial region of the south Indian Ocean. The thickness of the Subtropical Subsurface Water decreases towards the north. A layer of a dissolved oxygen maximum, which is clearly defined in the northern regions, is associated with the Subtropical Subsurface Water. The South Equatorial Current, as it approaches Malagasy, splits into 3 branches: northern, central and southern. After reviewing various theories on the water mass structure in the Somali Basin, it is concluded that salinity minimum and dissolved oxygen maximum in the intermediate layers of the Somali Basin occur due to the penetration of the entire water column above salinity minimum of the Antarctic Intermediate Water through the central branch of the South Equatorial Current. (Auth. mod.)

J-20805

Bradford, J.M., Roberts, P.E., **Distribution of reactive phosphorus and plankton in relation to upwelling and surface circulation around New Zealand,** *New Zealand journal of marine and freshwater research,* Mar. 1978 12(1), p.1-15, Refs. p.13-15.

For the New Zealand region, the distributions of reactive phosphorus, chlorophyll *a,* surface primary productivity, integrated primary productivity, and zooplankton biomass are collated, mainly from previously published data. The hydrology of the New Zealand region intimately affects the amount of reactive phosphorus available for phytoplankton growth. Winter cooling of surface waters is important in promoting nutrient recycling. Also, the New Zealand land mass and its submarine plateau disturb the general eastward flow of water, causing nutrient renewal, especially in summer, by upwelling associated with topographic features. Some statistically significant positive correlations exist between reactive phosphorus, phytoplankton, and zooplankton data averaged by 5 deg squares of latitude and longitude. In some upwelling areas high reactive phosphorus concentrations are found in conjunction with maxima in chlorophyll *a,* primary productivity, and zooplankton biomass. Some of the highest concentrations exist over the Bounty-Campbell Plateau. (Auth. mod.)

J-20842

Maxworthy, T., **Topographic effects in rapidly-rotating fluids: flow over a transverse ridge,** *Zeitschrift für angewandte Mathematik und Physik,* 1977 28(5), p.853-864, 11 refs.

A simple model of the Antarctic Ocean has been built in order to study the dynamic effects of transverse ridges on the circumpolar oceanic flow. By covering a wide range of model shapes and sizes and by varying the rotation rates of both the fluid container and the plate that drives the interior flow, certain dimensionless parameters that appear to govern the basic flow patterns and volume flush have been uncovered. The effect of combining several topographic features is also explored in a preliminary experiment. (Auth.)

J-20863

Dangeard, L., Vanney, J.R., Johnson, G.L., **Outcrops, currents and facies in the east Pacific antarctic zone (Bellingshausen and Amundsen seas)** [Affleurements, courants et faciès dans la zone antarctique du Pacifique oriental (Mers de Bellingshausen et d'Amundsen)], *Institut océanographique, Paris. Annales,* 1977 53(1), p.105-124, In French with English summary. 40 refs.

The Bellingshausen-Amundsen basins contain the main morphologic characteristics of the sea floor bordering Antarctic Coastal Mountains: 1) extensive dissection of the upper continental margin with resultant sedimentary accumulations in the ocean basin; 2) a unique morphology controlled by glacial marine activity and sedimentary bottom transport. From a study of submarine photographs taken by the *Eltanin,* the sea floor has been divided into the following two major categories: 1)scattered rock outcrops: rocky sea floor primarily volcanic (oceanic ridge and seamounts groups) with a transition zone in talus deposits to a nodule province, and the 5 types of glacial marine deposits; 2) the sedimentary sea floor is classified according to the amount of bioturbation and scour or smoothing effect of the bottom currents and turbidite deposition. This region can be considered as a model for an antarctic sedimentary basin. (Auth.)

J-20932

Naletova, I.A., Vladimirskaia, E.V., **Amino acids dissolved in sea water as one of the indicators of the physiologic state of an ecosystem,** *Oceanology,* June 1978 17(6), p.668-671, Trasnslated from Okeanologiia, 17(6):1977. 18 refs.

Analysis of the variations in the concentrations of free and bound amino acids dissolved in Scotia Sea water, phytoplankton production, production rate, and phytoplankton and zooplankton biomasses during the growing period led to the conclusion that the concentration of free and bound amino acids dissolved in sea water is not constant and, like other hydrochemical and biochemical parameters, it experiences seasonal variations. The concentration of bound amino acids in sea water depends on the phytoplankton production level. Concentra-

tions above 150 microgram/liter may be indicative of high water productivity. (Auth.)

J-20933

Semenov, V.N., Berman, I.S., **Biogeographic aspects of the distribution and dynamics of water masses off the South American coast,** *Oceanology,* June 1978 17(6), p.710-718, Translated from Okeanologiia, 17(6):1977. 42 refs.

Ten major and transitional types of water-mass structures, including subantarctic, antarctic, both at the surface and below, have been identified off the South American coast. The types of structures and the characteristics of the same kinds of water masses differ off the Pacific and Atlantic coasts so that no meridian mirror-plane of symmetry can be drawn either through the middle of the continent or through the oceans. The symmetry of the hydrologic structure of the World Ocean is 2:m in a first approximation, where 2 is the order of the axis of symmetry of the rotating ellipsoid and m is the equatorial mirror plane. The diversity of water masses and, consequently, of biotopes is greater off the coasts than within the same area in the open ocean because of transitional types of structures (neutral regions), salinity modifications, and topographic isolation of parts of the water masses. The boundaries (frontal zones) between adjacent surface water masses in the temperate waters vary considerably with the seasons. (Auth. mod.)

J-20991

Bauer, E., Biggs, D.C., **Non-biogenic fixed nitrogen in antarctic surface waters,** *Nature,* Nov. 2, 1978 276(5683), p.96-97, Refs. Includes Reply by B.C. Parker et al and Comments by S.Z. El-Sayed.

Bauer takes exception to Parker et al's (32-2944 or F-19915) suggestion that auroral activity is a possible source of the non-biogenic fixed nitrogen content of antarctic ice, considering it likely that a large fraction of the fixed N would be destroyed photochemically before reaching the ground. He suggests galactic cosmic ray ionization as a mechanism for explaining the fixed N in antarctic snow. Biggs, in turn, disputes Parker et al's claim that inorganic nitrogen-laden ice originating on the antarctic continent might provide a major contribution to the N budget for the epipelagic zone of the Southern Ocean. Biggs concludes that the input of non-biogenic NO3-N and NH4-N derived from continental ice is probably insignificant in the overall nitrogen budget for epipelagic antarctic seas, although enrichment from melting ice may be locally important. It is also likely that biogenic NH4-N from zooplankton and nekton excretion far outweighs NH4-N input from continental ice. Parker et al contend that Biggs' calculations were based on mean values, assuming uniform mixing to a depth of 50 m, and icebergs are not distributed uniformly through time and space, nor are their nitrogenous contents uniform. With respect to Bauer's comments, Parker et al question the photochemical destruction of NO under the given circumstances and reject the galactic cosmic ray model. El-Sayed apologizes for a misprint in his data on nutrient data, which was referenced by Parker et al in their calculations.

J-21000

Gegg, S.R., Groman, R.C., Kroll, J.D., Richards, D.A., **Cruise data report: R/V *Chain* Cruise 115 Legs 3 and 4, Southlant Expedition,** *Woods Hole, Mass. Oceanographic Institution. Technical report,* Dec. 1974 WHOI-74-95, 55p., ADA-003 004, 3 refs.

This report summarizes the geological and geophysical activities which were undertaken during Legs 3 and 4 of R/V *Chain* Cruise 115 (Southlant Expedition). A series of charts and profiles displays the navigation, bathymetry, total field magnetic anomaly, and free air gravity anomaly measurements, as well as the locations of coring, camera and hydrographic stations.

J-21020

Moore, T.C., Jr., Van Andel, T.H., Sancetta, C., Pisias, N., **Cenozoic hiatuses in pelagic sediments,** *Micropaleontology,* 1978 24(2), p.113-138, Refs. p.136-138.

The temporal and spatial distribution of hiatuses can be determined for the Cenozoic section from the core material recovered by the Deep Sea Drilling Project. For all ocean basins, maxima in hiatus abundance occurred at the Cenozoic-Mesozoic boundary, in the Late Eocene (spanning the Eocene-Oligocene boundary in some areas) and in Middle to Late Miocene. Fewest hiatuses are found in the Middle Eocene, Early to Middle Miocene and Quaternary. There is some variation in the temporal and spatial distribution of hiatuses both within and between the major ocean basins. It is suggested that the beginning of global cooling during the Cenozoic started with the rapid opening of the Atlantic Ocean and Norwegian Sea and the gradual closing of the Tethys Sea. The opening of the Australia-Antarctic seaway, the development of the circum-Antarctic current, the opening of the Norwegian Sea to the Arctic, the lowering of the southern sill to the Norwegian Sea, and the opening of the Tasman passage to deep water flow, all may have contributed to the increased formation of hiatuses in the Late Eocene-Oligocene. The initiation of North Atlantic Deep Water caused by the further lowering of the sill to the Norwegian Sea and the subsequent formation of the Antarctic icecap and Antarctic Bottom Water led to the Miocene maxima. The onset of glaciation in the northern hemisphere is reflected by a small peak in hiatus abundance in all the major ocean basins. (Auth.)

J-21022

Angel, M., ed, **Voyage of discovery,** Oxford, Pergamon Press, 1977, 696p., Numerous refs. passim.

DLC GC26.V68 1977

This volume is intended as a tribute to Sir George Deacon, the doyen of British oceanography, in honor of his 70th birthday on Mar. 21, 1976. Sir George began his oceanography on the early *Discovery* expeditions to the Antarctic. Thirty-nine papers, in the fields of oceanography, marine biology, and the earth sciences, are included in the volume. For selected papers see B-21022 through B-21029, and J-21023 through J-21026.

J-21023

Carmack, E.C., **Water characteristics of the Southern Ocean south of the Polar Front,** Voyage of discovery, edited by M.Angel, Oxford, Pergamon Press, 1977, p.15-41, 34 refs.

DLC GC26.V68 1977

A volumetric census of the Southern Ocean south of the Polar Front is computed from 945 selected hydrographic stations occupied around the antarctic continent. Water masses of the oceanic domain and continental shelf domain are considered separately, and attention is drawn to quantitative variations among the Atlantic, Indian and Pacific Ocean sectors of the Southern Ocean. Near-bottom values of potential temperature, salinity, dissolved oxygen and a density parameter are mapped to examine the abyssal circulation of Antarctic Bottom Water varieties in relation to their source regions. Warm Deep Water is by far the most voluminous water mass of the oceanic domain, comprising nearly 58% of the total volume, followed by Antarctic Bottom Water with about 28%. The remaining 14% of oceanic water is composed of surface and transitional water masses. Water on the continental shelves surrounding Antarctica displays dominant univariate modes in the class intervals theta= -2.0 to 1.6C, S=34.5 to 34.7 per mill. High Salinity Shelf Water, a principal mixing component of Antarctic Bottom Water, forms about 25% of the total summer-time reservoir of continental shelf water. The Weddell Sea is shown to produce the bulk of Antarctic Bottom Water, although the Ross Sea is also cited as a major source; only minor contributions appear to be derived from other regions. A rough calculation based on estimated shelf residence times yields a total bottom water production rate of 5 to 10 million cu m/sec. (Auth.)

J-21024

Jacobs, S.S., Georgi, D.T., **Observations on the southwest Indian/Antarctic Ocean,** Voyage of discovery, edited by M. Angel, Oxford, Pergamon Press, 1977, p.43-84, Refs. p.82-84.

DLC GC26.V68 1977

Stratification and circulation at intermediate and deeper levels of the southwest Indian/Antarctic Ocean are discussed on the basis of *R.D. Conrad* STD stations taken between South Africa, the Crozet Plateau, Kerguelen Islands and Antarctica from Jan. to Apr. 1974. Vertical sections of temperature, salinity, oxygen, silicate, phosphate and geostrophic velocity are presented. Medium-scale (10-100m) density-compensated thermohaline interleaving near the Antarctic Intermediate Water (AAIW) salinity minimum is taken as evidence of erosion through mixing with warmer, saltier water from the northern Indian Ocean. A direct surface origin for AAIW during the austral summer in this region is doubtful. North Atlantic Deep Water (NADW) influence is strong throughout the southwest Indian Ocean and reaches the antarctic coast east of the 50 deg. meridian. The deep-water temperature maximum, which occurs near or below the oxygen minimum, can be traced from Antarctica to north of the Subtropical Convergence. Lateral processes seem dominant in the mixing processes at deep-water levels. Water near the Antarctic continental slope plays an important role in the modification of deep water and is also related to formation of Antarctic Bottom Water (AABW). AABW production is inferred near the eastern end of the Weddell-Enderby Basin. The low silicate characteristic of newly formed AABW is transformed into a bottom silicate maximum within a short distance of the Antarctic continental slope. The major passage for AABW into the northwest Indian Ocean lies between the Crozet and Kerguelen Islands. A variety of near-bottom boundary-layer phenomena are illustrated by the STD and the nephelometer data. Baroclinic geostrophic transport has been computed relative to the deepest observations. (Auth. mod.)

J-21025

Gordon, A.L., Rodman, M.R., **Southern ocean temperature gradient near 2C,** Voyage of discovery, edited by M. Angel, Oxford, Pergamon Press, 1977, p.85-102, 26 refs.

DLC GC26.V68 1977

U.S.N.S. *Eltanin* hydrographic STD stations south of Australia reveal an abrupt 50% increase in vertical temperature gradient below the 2C isotherm (at depths of over 2000m). The gradient discontinuity is confined to a 1200km zone north of the polar front. Two hypotheses are presented which may explain the origin of the thermostad above 2C. The Advection Hypothesis suggests the thermostad is the product of advection from the southwest Atlantic Ocean. Its formation in the Atlantic results from intrusion of relatively cold low oxygen Pacific water into the layer immediately above the North Atlantic deep-water stratum. The Isopycnal Stirring Hypothesis suggests the thermostad layer above 2C is a product of cold water flux from the south. This cooling influence is derived from the temperature-minimum core layer. (Auth. mod.)

J-21026

McCartney, M.S., **Subantarctic mode water,** Voyage of discovery, edited by M. Angel, Oxford, Pergamon Press, 1977, p.103-119, 24 refs.

DLC GC26.V68 1977

Immediately north of the circumpolar subantarctic front, deep (400-600m) well-mixed layers are found in late winter. Spring and summer heating isolates these layers beneath the seasonal thermocline as thermostads. The zone in which this active renewal is found is several hundred kilometers wide, but the associated thermostad can be traced much further north—on the order of 2000 km. The thermostads and the often associated dissolved oxygen maxima can be found as far north as the south equatorial current regions of each southern hemisphere subtropical gyre. This water mass formation and spreading process is equivalent to that occurring east and south of the Gulf Stream and Kuroshio currents, where the thermostads are called Subtropical Mode Water (STMW). The name Subantarctic Mode Water (SAMW) is suggested. In common with STMW, SAMW contributes substantial volumetric modes to the central water masses, indicating SAMW to be the renewal agent of the high oxygen parts of the main thermocline water of the southern hemisphere subtropical gyres. Finally, it is noted that the specific types of SAMW formed in the southeast Pacific and Scotia Sea areas are identical in temperature and salinity to the South Pacific and South Atlantic varieties of Antarctic Intermediate Water (AAIW). The renewal process for AAIW is hence indicated as taking place north of the polar front zone, in the southeast Pacific and Scotia Sea parts of subantarctic zone. (Auth. mod.)

J-21048

Joyce, T.M., Toole, J.M., Zenk, W., **Anatomy of the Antarctic Polar Front in the Drake Passage,** *Journal of geophysical research,* Dec. 20, 1978 83(C12), p.6093-6113, 27 refs.

An intensive three-dimensional survey of the Antarctic Polar Front was made in the Drake Passage in Mar. 1976. The front, which was imbedded within one of the high-velocity cores of the circumpolar current, is viewed as a water mass boundary demarking the northern extent of near-surface antarctic waters. Within the front, water masses are observed to intrude, one above the other, with characteristic vertical scales of 50-100 m. The intrusions are horizontally anisotropic, being elongated in the along-stream direction and constrained primarily to the upper 800 m of the front. The spatial and temporal persistence of the variability is examined through the analysis of continuous vertical profiles of horizontal velocity, temperature, salinity, and oxygen with discrete sampling of nutrients. Applying a model (Joyce, 1977) for lateral mixing, poleward temperature and salinity fluxes due to interleaving are estimated as 0.086C cm/s and 0.069 per mill cm/s, respectively. If these values are typical, interleaving could play a significant role in large-scale balance of salt and, to a lesser extent, heat for the Southern Ocean. (Auth. mod.)

J-21049

Michel, R.L., **Tritium distributions in Weddell Sea water masses,** *Journal of geophysical research,* Dec. 20, 1978 83(C12), p.6192-6198, 30 refs.

During the 1975 and 1976 International Weddell Sea Oceanographic Expeditions, samples were collected for analysis by the Mount Soledad Tritium Laboratory. Most samples were of near-bottom water in the western and northern Weddell Sea. Some samples were also collected of Warm Deep Water, Winter Water, and surface water. Highest tritium concentrations in bottom water were found in the northern Weddell Sea and along the western continental shelf. This indicates that the most recently formed bottom water is in these areas. In the central Weddell Sea, concentrations were lower, indicating slower renewal of bottom water. An upper limit of 3.5 million cu m/s is obtained for the formation rate of Weddell Sea Bottom Water. This yields a production rate of about 7 million cu m/s for classical Antarctic Bottom Water. Surface water and Winter Water also showed a strong gradient in tritium concentrations between the central Weddell Sea and the continental shelf. (Auth.)

J-21073

Reid, J.L., **Sea-surface temperature, salinity, and density of the Pacific Ocean in summer and in winter,** *Deep-sea research,* 1969 Vol.16 Suppl., p.215-223, ADA-723 452, 7 refs.

New maps have been prepared from more recent data. They are made, not from averages of all available materials, but from selected expeditions; this may preserve some interesting patterns that disappear from averaged maps. The principal value over earlier maps is the extension to higher latitudes in the winter seasons, though this has been done by an indirect method near Antarctica. (Auth.)

J-21097
Gilmour, A.E., **Ross Ice Shelf sea temperature,** *Science,* Feb. 2, 1979 203(4379), p.438-439, 6 refs.

Two temperature profiles recorded by a sensitive bathythermograph at the Ross Ice Shelf Project site are presented. From the shape of the profiles it is concluded that an inflow of water at intermediate depths provides a source of heat to drive a regime in which ice is melted from the interface at a depth of 360 m. Melting maintains the temperature of a thick layer under the ice at about -2.14C, close to the ambient freezing temperature. A very well-mixed layer about 35 m thick was found at the seabed. (Auth.)

J-21098
Jacobs, S.S., Gordon, A.L., Ardai, J.L., Jr., **Circulation and melting beneath the Ross Ice Shelf,** *Science,* Feb. 2, 1979 203(4379), p.439-443, 23 refs.

Heat is supplied by seawater that moves southward beneath the ice shelf from a central warm core and from a western region of high salinity. The near-freezing Ice Shelf Water produced flows northward into the Ross Sea. (Auth.)

J-21099
Williams, R.T., Robinson, E.S., **Ocean tide and waves beneath the Ross Ice Shelf, Antarctica,** *Science,* Feb. 2, 1979 203(4379), p.443-445, 10 refs.

The ocean tide in the southern Ross Sea is principally diurnal. The tropic tide range (double amplitude) is between 1 and 2, depending on the location, and is closely related to the local water-layer thickness. The range of the tropic tide is more than three times the range of the equatorial tide. Cotidal and coamplitude charts were made for the largest diurnal constitutents, K1 and O1, and a provisional cotidal map was made the semidiurnal constituent M2. The amplitudes of the diurnal tide constituents are larger in the Ross Sea than in the adjacent southern Pacific Ocean, indicating the existence of a diurnal resonance related to the shape and depth of the sea. Waves related to ocean swell propagate into the ice-covered region from the northern Ross Sea. The waves have amplitudes near 1 cm, and periods in the range 1 to 15 min. The speed at which these waves travel is successfully predicted by flexural wave theory. (Auth.)

J-21100
Michel, R.L., Linick, T.W., Williams, P.M., **Tritium and carbon-14 distributions in seawater from under the Ross Ice Shelf Project ice hole,** *Science,* Feb. 2, 1979 203(4379), p.445-446, 12 refs.

The tritium and carbon-14 activities of seawater samples collected from 22 to 22 m below the ice at the Ross Ice Shelf Project ice hold are reported. The tritium results show that the waters below the ice have exchanged with Ross Sea water since the advent of nuclear testing. The carbon-14 results indicate that waters in the upper layer exchange in time periods of less than 6 years. Measurements of these isotopes in seawater under the Ross Ice Shelf in McMurdo Sound show that this water has a different history. (Auth.)

J-21115
Pierce, J.W., Siegel, F.R., **Suspended particulate matter on the southern Argentine shelf,** *Marine geology,* Jan. 1978 29(1/4), p.73-91, 27 refs.

The source of sediments in the Argentine Basin is believed by some to be primarily the antarctic region. Others argue for an Argentine source, relegating transport by Antarctic Bottom Water to an insignificant role. Sampling was conducted on the southern Argentine shelf to examine the mode of cross-shelf transport and attempt to assess the importance of the southern part of South America as a source of sediments contributed to the Argentine Basin at the present. There is little to no movement of suspensates directly across the shelf. Transport appears to follow current pattern of south alongshore, then east, and finally northeast off the shelf. It is determined that most of the material comes from the Argentine land area with minor sources present in the Falkland Is. and south of the South American continent.

J-21127
Jedwab, J., **Copper, zinc and lead minerals suspended in ocean waters,** *Geochimica et cosmochimica acta,* Jan. 1979 43(1), p.101-110, 34 refs.

Individual particles of malachite, tenorite, paratenorite, laurionite and sphalerite, as well as several intermediate compounds of Cu, Zn, Pb, Cl, S. OH and CO3 have been identified among particulate matter filtered from Atlantic and Pacific deep water samples. These particulate matter samples were provided mainly by the GEOSECS 1972 and 1974 cruises. The detection and the identification of the individual heavy metal compounds were made by a combination of light microscopy, SEM, EMP and XRD. The highest frequency of heavy metal compounds has been found at several North Atlantic stations and at one antarctic station. Their origin can, at least partly, be ascribed to technological influences, since metallic copper and brass particles are sometimes found associated with, or included in the heavy metal compounds. Others, however, result clearly from growth in the water. (Auth.)

J-21130
Gordon, A.L., **Deep antarctic convection west of Maud Rise,** *Journal of physical oceanography,* July 1978 8(4), p.600-612, 35 refs.

In Feb. 1977 a column of water (14 km radius), within the central region of the Weddell Gyre west of Maud Rise, was observed in which the normal antarctic stratification sequence of temperature minimum to temperature maximum was absent. The column appeared as a cold, low-salinity, high-oxygen, cyclonic flowing eddy extending to at least 4000 m. It is hypothesized that similar eddies were common in this region and represent winter structures which have survived into the summer period. Eddy formation is explained as a product of winter period static instability, similar to the MEDOC observations in the Mediterranean, but without the subsequent sinking and spreading phase. Winter period static instability in the Weddell Gyre is shown to be a likely condition and may be related to the frequent occurrence of a large polynya within the central region of the Weddell Gyre. (Auth. mod.)

J-21131
Molinelli, E., **Isohaline thermoclines in the southeast Pacific Ocean,** *Journal of physical oceanography,* Nov. 1978 8(6), p.1139-1145, 6 refs.

A 300 m thick, nearly isohaline layer, reaching depths of 500 m, is found in the Subantarctic Zone of the southeast Pacific, the Drake Passage and the Scotia Sea. Within the nearly isohaline layer there is a very slight decrease in salinity with depth, but a marked change in temperature. The density ranges from 27.15 at the top to 27.3 at the bottom of the layer. Its formation in the Pacific is believed confined to the southeast portion, because hydrographic stations in the Subantarctic Zone at 90W do not reveal a nearly isohaline layer. The water column, represented by the 90W stations, requires the addition of colder and fresher potential temperature and salinity characteristics at densities greater than 27.1 to account for formation of the nearly isohaline layer and underlying waters. Such characteristics are readily available in the uppermost few hundred meters of northern Antarctic Zone and southern Polar Front Zone waters in the southeast Pacific. It is suggested that cross Polar Front, isopycnal spreading of these Antarctic waters is sufficient to produce the observed nearly isohaline layer in the Subantarctic Zone, i.e., vertical mixing need not play a significant role in the original production. In the area of formation, subantarctic waters are to within 100 km of antarctic waters. It is suggested that the nearly isohaline layer is a significant factor in

the formation of Antarctic Intermediate Water (AAIW) in the Atlantic. (Auth. mod.)

J-21150
McConnell, A., **Historical methods of temperature measurement in arctic and antarctic waters,** *Polar record,* Sep. 1978 19(120), p.217-231, 17 refs.

Various methods of temperature measurement in arctic and antarctic waters in the late 19th century are described, including Lord Cavendish's overflow minimum thermometer adapted for use in the sea, but without a scale; a self-registering thermometer, devised by J. Six; a wooden cask, constructed by W. Scoresby to collect water, which was then measured by ordinary thermometer; a Negretti and Zambra sheathed-bulb thermometer; the Miller-Casella thermometer; and the reversing thermometer, also by Negretti and Zambra. Temperature soundings in antarctic waters, made with a series of Miller-Casella thermometers aboard *Challenger* in 1874, proved unsatisfactory since the thermometers came up showing the same results from varying depths.

J-21166
Treshnikov, A.F., Baranov, G.I., Kornilov, N.A., **Circumpolar countercurrent of the Southern Ocean,** *Problems of the Arctic and the Antarctic; collection of articles,* 1978 Vol.43-44, p.173-179, TT-75-52082, For Russian original see J-14375. 8 refs.

The Stommel-Koshliakov model has been used to deduce circulation conditions at different depths in the Southern Ocean. The circumpolar current first appeared on the flow charts in the Pacific sector at a 2000 m. depth; it was visible in all the sectors at 2500 m. and reached its maximum development at 3000 to 3500 m. According to calculations for the Antarctica-Africa cross-section, water masses are transported by the cross-eastward and westward currents at the rate of 172 and 145 million cubic feet per second respectively.

J-21170
Brewer, P.G., **Direct observation of the oceanic CO2 increase,** *Geophysical research letters,* Dec. 1978 5(12), p.997-1000, 16 refs.

The increase in atmospheric CO2 of approx 50 ppm from the mid-nineteenth century to 1972 has led to a corresponding increase in the pCO2 of sea water. The record of this increase is present in the oceanic water masses, though the signal is obscured. By observing the alkalinity and total CO2 concentration within a water mass, and stripping off the perturbations of the CO2 system due to respiration, carbonate dissolution and nitrate addition, the original atmospheric equilibration signal may be recovered. The application of these calculations to GEOSECS (1972) data from the core of the Antarctic Intermediate water reveals propagation of the atmospheric CO2 signal northwards. (Auth.)

J-21196
Guala, J.R., Jr., **Bottom topography effects on ocean currents,** Geophysical fluid dynamics report No.6, Newark, University of Delaware, June 1972, 129p., AD-748 008, Ph.D. Thesis. 32 refs.

The effects of bottom topography on ocean currents are considered. It is shown that a laminar laboratory model, with height to width ratio differing from that of a large scale geophysical motions, can be used to model topographic effects on ocean currents. The governing vorticity equation is solved analytically for the flow over long constant cross-section ridges. The vorticity equation, given by a balance of inertial, ekman suction and topographic terms, is solved numerically for the behavior of the antarctic circumpolar current in the vicinities of both Macquarie and Kerguelen-Gaussberg Ridges.

J-21205
McKee, W.D., **Scattering of Rossby waves by partial barriers,** *Geophysical fluid dynamics,* Sep.1972 4(1), p.83-89, AD-754 718, 11 refs.

The scattering of Rossby waves by partial barriers is studied. It is found that only a small fraction of the wave energy will penetrate the gap between South America and Antarctica if the wave period is less than a month. (Auth.)

J-21212
Tucholke, B.R., **History of sedimentation and abyssal circulation on the Greater Antilles Outer Ridge,** *Woods Hole, Mass. Oceanographic Institution. Technical report,* Jan. 1974 WHOI-74-1, 318p., AD-776 605, Refs.

The history of sedimentation and abyssal circulation on the Greater Antilles Outer Ridge, and the role of Antarctic Bottom Water (AABW) are discussed. During the middle Eocene, the newly formed Western Boundary Undercurrent (WBUC), flowing from a northern provenance, interacted with existing sea-floor topography and the AABW, flowing in from the South Atlantic, and began to deposit acoustically transparent sediment on the eastern Greater Antilles Outer Ridge. This depositional pattern persisted until the middle or late Miocene, when increased AABW flow diverted the WBUC to the northwest and initiated deposition of the western sector of the Greater Antilles Outer Ridge. Shortly thereafter, decreased AABW flow and lower current speeds allowed rapid deposition of sediment on the Ridge. The bottom topography has controlled the abyssal current pattern, and current-controlled deposition has continued to construct the Greater Antilles Outer Ridge since early Pliocene time.

J-21213
U.S. National Oceanographic Data Center, **Inventory of archived data,** Its report No. NODC-PUB-C-3-REV, Washington, D.C., 1969, 188p. AD-713 591.

The revision of the inventory of archived data is designed to supply the oceanographic community with up-to-date information concerning the availability of different types of processed data for various geographic areas. The information is divided as follows: North Atlantic; South Atlantic; North Pacific; South Pacific; Indian Ocean; Arctic; and Antarctic. Within each division, station data charts precede BT charts. (Auth.)

J-21227
Sciremammano, F., Jr., **Observations of antarctic polar front motions in a deep water expression,** *Journal of physical oceanography,* Jan. 1979 9(1), p.221-226, 16 refs.

It is shown that perturbations in the position of the surface and subsurface expressions of the polar front in Drake Passage are also evident in a deep water frontal expression. This deep water expression has been seen in hydrographic surveys as a sharp horizontal temperature gradient underlying the polar front and extending nearly to the bottom. The connection is documented for two periods in 1976 when direct measurements were available in the upper and deep water. (Auth.)

J-21233
Cresswell, G.R., Golding, T.J., Boland, F.M., **Buoy and ship examination of the subtropical convergence south of Western Australia,** *Journal of physical oceanography,* Mar. 1978 8(2), p.315-320, 7 refs.

The eddying behavior of a satellite tracked buoy near the subtropical convergence zone south of Australia promoted a ship survey of the area. The buoy's behavior over several months suggested a quasi-stable current pattern with some evidence for an overall movement to the southwest. The pattern was found to be linked to deep structure which apparently drove the surface waters. The tempera-

tures measured by this buoy and another released during the experiment indicate they spent some time travelling parallel to and near the convergence. The buoy showed a preference for subtropical waters, but occasionally crossed the convergence into subantarctic waters. (Auth.)

J-21272

Jacques, G., **Antiprod 1 cruise, *Marion Dufresne*, 1-28 March, 1977** [Campagne Antiprod 1, *Marion Dufresne*, 1-28 mars 1977], *France. Centre national pur pour l'exploitation des océans. Publication,* 1978 No.16, 149p., In French with English summary.

During the cruise Antiprod 1 of the supply-ship *Marion-Dufresne* of the TAAF (March 1st-March 28, 1977), the characteristics of the planktonic production and of the factors which condition it have been studied in the Indian Ocean in the region of influence of the antarctic divergence at the end of the summer. The authors are presenting the essential data of the work done in the scope of a descriptive study: 29 stations situated along a N-S line, between 40 and 62S, West of the Kerguelen islands. The most interesting results concern the demonstration of an unusual hydrological structure in the Antarctic, with antarctic and subtropical convergencies joining, the marked poverty of the phytoplankton: the maximal biomass and the resulting transparency of the waters can be compared to the oligotroph seas, such as the Mediterranean, and the very particular behaviour of the silicates which are used up (or are not renewed) much more quickly than the other nutrients when the waters of the divergency drift northwards. (Auth.)

J-21278

Ichimura, S., Fukushima, H., **On the chlorophyll content in the surface water of the Indian and the Antarctic Oceans,** *Botanical magazine (Tokyo),* 1963 76, p.395-399, 7 refs.

During the cruise of the Japanese Antarctic Research Expedition in December 1960—April 1961, samples for chlorophyll measurement in the surface water were collected. The chlorophyll distribution in the Indian and the Antarctic Oceans was considerably related to the character of the water masses. The highest value was obtained in the Antarctic Surface Water mass, the next came in the Subantarctic Upper Water mass, and the lowest values were observed in the Indian Ocean. The chlorophyll *a* concentration was 0.15-0.6 mg/cu m for the Antarctic Ocean, and 0.02-0.2 mg/cu m for the Indian Ocean. The total chlorophyll content in the Antarctic and the Indian Oceans was 0.4-1.2 mg/cu m and 0.1-0.3 mg/cu m, respectively. The former values were approximately equal to those in the Oyashio area, and the latter were equal to those in the Kuroshio area. (Auth.)

J-21285

Rumball, E.I., **Modelling the exclusive economic zone enforcement problem,** *New Zealand journal of science,* Sep. 1978 21(3), p.343-349, 6 refs.

Some characteristics of a management regime for the administration of New Zealand's 200-mile exclusive economic zone, which includes the Snares, Auckland, Campbell, Bounty, and Antipodes Islands, are discussed. Mathematical models of the game-theoretic type are used to derive bounds on the peacetime levels of enforcement effort needed to support such a regime. The models provide basic relationships between the rate of infringements, the extent of the enforcement effort, and the level of penalties. These relationships in turn provide theoretical bounds on the levels of enforcement effort needed to ensure that the operations are not lacking in credibility. (Auth. mod.)

J-21343

Stein, M., **Temperature and profiling current meter measurements in the central Scotia Sea,** *Meeresforschung,* 1978 26(3/4), p.198-205, 3 refs.

Observations of stratification and currents in the central Scotia Sea in December 1975 have been carried out by the German research vessel *Walther Herwig* during its first Antarctic cruise. The influence of the submarine Scotia Arc on the Winter Water layer is shown. By means of profiling current meter measurements the effect of this cold water layer on the vertical distribution of currents becomes visible. (Auth.)

J-21355

Treshnikov, A.F., Sarukhanian, E.I., Smirnov, N.P., **Vertical structure of the Antarctic Circumpolar Current in the Drake Passage on the basis of field data** [Vertikal'naia struktura antarkticheskogo tsirkumpoliarnogo techeniia v prolive Dreĭka po dannym instrumental'nykh nabliudeniĭ], *Akademiia nauk SSSR. Doklady,* 1978 243(4), p.1044-1047, In Russian. 5 refs.

Three basic characteristics were noted when joint American-Soviet studies of circulation and vertical structure of the Drake Passage were carried out. The major flow through the strait from surface level to 2800-3000 m is east-northeast, that is, generally in accord with ACC flow. Two streams within this current move much more rapidly than the overall flow: one in the center, and one in the northern sector. Below 2800-3000 m there is a weak bottom countercurrent flowing southwest. From 60.5 to 61S a western current can be discerned; it extends from the surface to the bottom. The authors cannot corroborate the powerful circumpolar countercurrent described by some researchers.

J-21362

American Geophysical Union, **Oceanic fronts [and] European Geophysical Society meeting abstracts,** *American Geophysical Union. Transactions,* Sep. 1977 58(9), p.896-921.

Five of the papers presented at the two conferences pertain to the Antarctic. Poggi and Vallon spoke on the Ampere Glacier, Kerguelen Island (p.903), Taylor and Joyce both addressed themselves to the antarctic polar front (p.885), and Hayes investigated the upper water thermal structure in the polar frontal zone (p.886).

J-21379

Worley, S.J., Nowlin, W.D., Jr., **Oceanographic data collected aboard R/V *Melville* during January-February 1977 as a part of FDRAKE 77,** College Station, Texas A & M University, Oct. 1978, 137p., 78-12-T, 3 refs.

Two cruises were made during FDRAKE 77. The yearlong array of current, temperature and pressure recorders deployed during FDRAKE 76 was recovered from the *Melville*, and a cluster of five current/temperature/pressure moorings in the central Drake Passage and pressure recorders at the northern and southern sides of the passage were deployed. Tabulated hydrographic data is presented here under the following column headings: depth, temperature, salinity, stability, potential temperature, anomaly of potential density relative to 0, 1000, 2000, 3000, 4000 db, thermosteric anomaly, specific volume anomaly, geopotential anomaly, and transport potential.

J-21397

Copin-Montegut, C., Copin-Montegut, G., **Chemistry of particulate matter from the south Indian and Antarctic oceans,** *Deep-sea research,* Oct. 1978 25(10), p.911-931, 35 refs.

Particulate matter was collected from the surface water of the southwest Indian Ocean and the Antarctic Ocean in the area of Kerguelen, Heard, and Crozet islands. Some deep samples were taken around Kerguelen. The samples were analyzed for C, N, P, Al, Si, Ca, and Mg. In the tropical and subtropical Indian Ocean, characterized by warm, nutrient-poor surface water, C, N, and P are low and the ratios C/N/P approach those of average phytoplankton. The values of particulate Si, Al, Ca, and Mg also are low but higher near Amsterdam Island and in the north part of the study area. In the subantarctic zone, between the Subtropical and Antarctic convergences, C, N, P, and Si are, on an average, three times more abundant than in the Indian Ocean, but the C/N/P ratios are the same. South of the Antarctic Convergence or Polar Front, particulate Si becomes very abundant, especially near the Polar Front and east of Kerguelen Island. C and N also are very high at these locations but elsewhere are lower than in the subantarctic zone. The particle composition is variable but N stays in constant ratio to C. Particles are richer in P than in oligotrophic areas. The particulate Si and C results show that the annual production of opal by organisms as determined by Lisitzin is probably too high. A budget for silica in surface water of the Antarctic Ocean is outlined. (Auth.)

J-21445

Stein, M., **Oceanographic investigations** [Ozeanographische Untersuchungen], *Archiv für Fischereiwissenschaft,* July 1978 Vol.29, Beiheft 1, p.23-31, In German with English summary. 4 refs.

Observations on stratification and currents in the Scotia Sea and off the Antarctic Peninsula have been carried out by the German research vessel *Walther Herwig* and the stern-trawler *Weser* between November 1975 and May 1976. The influence of the seasonal heating on the uppermost water layer, i.e. the Antarctic Surface Water, is shown. The horizontal as well as the vertical distribution of temperature and salinity during the first cruise leg very clearly delineates the existence of an eddy, which seems to emanate from the waters north of the Antarctic Convergence. Measurements south of Elephant Island reveal the influence of tides and occasional bursts of silicious subzero water masses on the stratification.

J-21452

Kitchell, J.A., Kitchell, J.F., Johnson, G.L., Hunkins, K.L., **Abyssal traces and megafauna: comparison of productivity, diversity and density in the Arctic and Antarctic,** *Paleobiology,* 1978 4(2), p.171-180, 39 refs.

The megafauna and associated behavioral traces of two deep-sea benthic environments, the central Arctic and Antarctic, with a surface primary productivity differential of 10,000 were compared to assess the role of food availability in foraging strategy and community structure. Bottom photographs, analyzed for megafauna and trace density and diversity at comparable depths in the Arctic Canada Basin and the Antarctic Bellingshausen Basin, indicated that trace frequency was inversely proportional to organism density but that trace diversity directly reflected organism diversity. Those traces identified in the fossil record to represent efficient foraging strategies, i.e., the *Nereites* facies, were conspicuously absent at all depths in the Arctic and present at all depths in the Antarctic, in contradiction of the paradigm of increasing behavioral complexity and sediment exploitation as food availability decreases. Presence or absence of surface-grazing organisms seems to exert a greater influence on trace diversity than depth or nutrient supply. Trace density, however, may reflect episodic sedimentation events which intermittently influence the deep-sea trophic regime. (Auth.)

J-21480

Newell, R.E., Navato, A.R., Hsiung, J., **Long-term global sea surface temperature fluctuations and their possible influence on atmospheric CO2 concentrations,** *Pure and applied geophysics,* 1978 116(2/3), p.351-371, 25 refs.

Changes of atmospheric carbon dioxide concentration since 1958, including carbon dioxide at the South Pole, are shown to be related to sea surface temperature changes. The largest contribution to changes arises from the Pacific equatorial upwelling region, with the Indian Ocean and Atlantic contributing only small fractions to the variance. It is hypothesized that the observed relationship is related to the nutrients that are brought up by upwelling cold water, with photosynthesis contributing to a lowering of the partial pressure of carbon dioxide in the sea and thus to a greater tendency for a flux from the air to the sea. Possible longer term variations of sea temperature and carbon dioxide are discussed.

J-21545

Jackson, T.L., Linick, T.W., Michel, R.L., Williams, P.M., **Tritium and carbon-14 distributions in McMurdo Sound, 1977,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.71-73, 7 refs.

Sea waters from McMurdo Sound sampled for tritium and C-14 concentrations, and ice cores of 1-yr-old pack ice from the McMurdo Station sampling site were analyzed for tritium. Data for the samples are tabulated. Biological studies have indicated that water flows northward from under the Ross Ice Shelf on the west side of McMurdo Sound. The highest microbial activity was found at McMurdo Station, and the lowest activity, on the west of the Sound. These investigations indicate that the seawater on the east side of McMurdo may have undergone a more recent interaction with the atmosphere than the west side, causing higher concentrations of bomb-produced radionuclides such as tritium and C-14. Higher concentrations of both radioisotopes were found at the McMurdo sampling site. However tritium concentration closer to values found in the west side of McMurdo were found in the open Ross Sea. Thus, other factors, such as snow melt, may influence concentrations at McMurdo. The average tritium concentration for the ice cores was 1.01 tritium units, slightly higher than that found in the McMurdo seawater.

J-21546

Kirwan, A.D., Jr., Reyna, E., **Surface layer kinematics of the circumpolar current as inferred from Nimbus 6,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.73-74, 3 refs.

Five satellite (Nimbus 6) tracked drifters were deployed in the Antarctic Circumpolar Front south of New Zealand to test the feasibility of making oceanographic measurements of the surface layer currents, air and sea temperatures, and atmospheric pressure in the Circumpolar Current during the First Global Atmospheric Research Global Experiment. The trajectories of three of the drifters (two failed) are illustrated and discussed. The usefulness of the Random Access Measurement System (RAMS) on Nimbus 6 as a tool for studying the large scale, near surface circulation and air/sea interactions in the upper layer of the Circumpolar Current is demonstrated.

J-21547

Parodi, R.D., **Polar Front zone in the western Scotia Sea, winter 1977,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.75-76, 11 refs.

The primary objective of this research was to determine the Polar Front on the Scotia Sea in winter. The field operations, measurements taken, and instruments used are described, and the position of the Polar Front zone is defined.

J-21548

Heath, R.A., Bryden, H.L., Hayes, S.P., **Interaction of the Antarctic Circumpolar Current with topography south of New Zealand,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.76-78, 7 refs.

The purpose of the initial experiment in these investigations was to study the spatial and temporal variability of low frequency motions and their effects on the mean circulation, and to study the late winter formation of subantarctic mode water. Six current meter and thermistor chain moorings were deployed, one drifting buoy was launched, and 13 CTD (conductivity-temperature-depth) stations were made. The CTD station and mooring positions are given. The results of preliminary analysis of the data are briefly summarized. The slope of Campbell Plateau appears to be a region of active formation of subantarctic mode water, and the formation may take place throughout the year rather than only during later winter.

J-21549

Nowlin, W.D., Jr., Pillsbury, R.D., Sievers, H.A., **FDRAKE 77 *Yelcho*,** *Antarctic journal of the United States.* Oct. 1978 13(4), p.78-79, 1 ref.

The objectives of the FDRAKE (First Dynamic Response and Kinematics Experiment) 77 cruise of *Yelcho* were: to recover deep pressure gages deployed during Feb. 1977 on the north and south sides of Drake Passage; to install other pressure gages at these locations; to recover a cluster array of current/temperature recorders moored in the central passage during Feb. 1977; and to deploy a single, year-long mooring in the central passage. These missions were accomplished. The objectives of the measurements are summarized.

J-21550

Olson, D.B., Emery, W.J., **Eddies and ridges in the thermal structure south of New Zealand,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.79-81, 6 refs.

As part of the International Southern Ocean Studies (ISOS), expendable bathythermograph (XBT) observations were taken by the USCGC *Burton Island* and USCGC *Glacier* on their southward transits from Wellington, New Zealand, to McMurdo, in Dec. 1977. In addition to the XBT program, five satellite-tracked drifting buoys were deployed from the *Burton Island.* The objective was for both ships to cross eddy structures in the XBT temperature sections and survey with a pattern of XBT casts. The temperature sections are shown along with profiles of surface temperature, salinity, and density. The locations of cold ridges and eddies are designated and their features are briefly described.

J-21551

Foster, T.D., **Temperature and salinity fields under the Ross Ice Shelf,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.81-82.

A series of vertical temperature and salinity profiles were made in the ocean beneath the Ross Ice Shelf at J-9. A high-resolution electronic conductivity-temperature-depth (CTD) recorder, specially modified to fit down the access hole, was used. The CTD data were recorded on magnetic tapes and will be processed by computer to provide corrected salinity profiles. A preliminary vertical temperature and salinity profile is illustrated and discussed.

J-21552

Foster, T.D., Middleton, J.H., **International Weddell Sea Oceanographic Expedition, 1978,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.82-83.

The work of the third phase of the International Weddell Sea Oceanographic Expedition (IWSOE) is aimed at understanding the mixing processes that lead to the formation of bottom water near the edge of the continental shelf. Current meter moorings were set out by the Norwegian research vessel *Polarsirkel* in 1977, and physical oceanographic investigations were conducted by *Glacier* in Feb. and Mar. 1978. At several stations, a mass of extremely cold water with temperatures below the freezing point, at one atmosphere pressure, was found just above the bottom. The water mass probably originates beneath the Filchner Ice Shelf. It was also observed that the intrusion of warm water from the open ocean onto the continental shelf was much more irregular than previously indicated.

J-21553

Jacobs, S., Bruchhausen, P., Ardai, J., **Physical oceanography of the Ross Sea,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.83-85, 7 refs.

Oceanographic measurements were made through the J-9 access hole on the Ross Ice Shelf and from the Burton Island. At J-9 temperatures were measured with reversing thermometers. Water samples were taken from seawater pumped up the hole and with modified "Niskin" bottles. Nearly all the equipment was contaminated by diesel fuel byproducts remaining from the drilling operation and by a slushy ice that formed in the hole. Salinity was determined onsite with a laboratory salinometer. Geotechnical samples were sent to the United States for analysis. A Geodyne savonius rotor current meter was suspended beneath the ice for periods up to several hours; and a modified Thorndike deep-sea camera photographed the sea floor, the ice hole, and biological activity. From *Burton Island* 80 salinity/temperature/depth (STD) casts were completed. Aanderaa current meters and a thermistor chain were bottom-moored at the locations indicated. Fifty XBT (expendable bathythermograph) casts were made over portions of the ship's track. A submarine depression deeper than 1,100 meters was encountered southwest of Terra Nova Bay, near station 168. It is the deepest region on the Ross Sea continental shelf.

J-21554

Georgi, D.T., **Differences between AAIW in the southeast Pacific and the southwest Atlantic,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.86-87, 3 refs.

Modal properties of antarctic intermediate water (AAIW) have been obtained from bivariate distribution diagrams constructed for a region in the southwest Atlantic and another in the southeast Pacific. It is found that the AAIW of the Atlantic is nearly 1C colder than the AAIW in the southeast Pacific sector. An explanation of the temperature difference in terms of poleward and/or a heat flux to the atmosphere does not prove satisfactory. It appears possible that the Atlantic AAIW derived from subantarctic mode waters (SAMW) in the southeast Pacific, but the relative importance of cross-frontal mixing or the sea-air heat exchange is not yet clear.

J-21555

Gordon, A.L., **South Atlantic oceanography,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.87-89, 10 refs.

From Nov. 1976 to May 1978, ARA Islas Orcadas made four cruises into the Atlantic sector of the Southern Ocean, obtaining 250 hydrographic stations. Conductivity (salinity), temperature, pressure (depth), and oxygen of the water columns were measured at stations with a CTD-02, and water samples for CTD-02 sensor calibration and additional nutrient chemistry (silicate and phosphate) were obtained. In addition to the hydrographic station data, water samples were collected to determine tritium and stable isotope, XBT (expendable bathythermograph) observations were made, surface-water samples were obtained for salinity and silicate, and surface-water temperature was measured along the ship's track. The data will be analyzed to define the thermohaline-chemical distribution of water masses and frontal structures found in the Atlantic sector of the Southern Ocean.

J-21556

Robinson, E.S., Williams, R.T., Neuburg, H.A.C., **Spatial variation of the K1, O1, and M2 constituents of the southern Ross Sea tide,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.89-91, 6 refs.

Tidal variations of gravity were measured for 39 days at site O-19 and for 30 days at site C-16 in the southern Ross Sea. Amplitudes and phase angles of the ocean tidal constituents K1, P1, O1, M2, S2, and N2 were calculated from the tidal variations of gravity. The results show that the southern Ross Sea tide is dominated by diurnal constituents, which differs from most parts of the ocean where the semi-diurnal constituents are largest.

J-21557

Williams, R.T., Robinson, E.S., Neuberg, H.A.C., **Ocean wave measurements at the RISP J-9 camp,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.91-92, 1 ref.

Three gravimeters were operated simultaneously in the ocean beneath the Ross Ice Shelf near the J-9 camp to determine the velocity and direction of the ocean waves. The velocities of the three wave groups are close to the value of 48 m/s expected for a long gravity wave in the water layer, which is 238 m thick at J-9. Their directions of propagation are consistent with the supposition that they have traveled from the northern Ross Sea into the ocean beneath the ice shelf. The ice shelf has no measurable effect on the phase velocity of long waves.

J-21568

Ledbetter, M.T., Huang, T.C., **Reduction in the South Pacific zone of high bottom current activity during the last 3 million years,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.113-114, 15 refs.

The accumulation rate of manganese micronodules (MMN) over a period of three magnetic epochs: Brunhes (0.7 m.y.a.), Matuyama (0.7-2.43 m.y.a.), and Gauss (2.43-3.32 m.y.a.) is used as an index of bottom current activity. Since the MMN zone continually decreases in areal extent through the Matuyama and Brunhes epochs, it is inferred that bottom water production in the South Pacific has decreased since the onset of Northern Hemisphere glaciation 3.2 m.y.a. Additionally, the decrease in inferred bottom water production occurred after a significant cooling of antarctic water 3.5 m.y.a.

J-21572

Zlotnicki, V., Norton, I.O., Sclater, J.G., Von Herzen, R.P., **Heat flow in the Weddell Sea,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.120-121, 3 refs.

Measurements of heat flow in the Weddell Sea, made aboard *Islas Orcadas,* gave surprisingly high values, especially in elevated topography south of the South Sandwich fracture zone. Cooling models for the lithosphere allow one to relate the heat flux and depth to the basement with the age of the crust.

J-21693

Treshnikov, A.F., **Soviet research in the Southern Ocean** [Itogi sovetskikh issledovaniĭ i IUzhnom okeane], *Antarktika; doklady komissii,* 1978 No.17, p.82-95, In Russian. 32 refs.

A history of Soviet Antarctic Expedition work in the Southern Ocean in the last 20 years is given. Over this period 1,500 oceanographical sampling points were used, hundreds of thousands of miles covered by echo sounding, characteristics of surface circulation studied over 35,000 miles, and deep circulation investigated at 26 stations. Bottom sediments were sampled at more than 500 stations and more than 200 measurements taken of sediment depth. Biological studies include more than 4,000 plankton and 400 benthic probes. These data allowed the geographical limits of the Southern Ocean to be established, the frontal zones and bordering seas defined, water masses identified, icebergs classified, sea ice masses located and tracked, and both surface and deep water circulation more completely charted.

J-21710

Hinz, K., **Geophysical studies in Antarctic waters with the *M.S. Explora*** [Geophysikalische Untersuchungen in antarktischen Gewässern mit "M.S. Explora"], *Meerestechnik,* June 1978 9(3), p.83-87, In German and English.

Combined geophysical studies were carried out on board the *Explora* in the Weddell Sea and on the eastern Antarctic continental margin between 67S and 74.2S, 30W and 20E in Jan.-Feb. 1978. Preliminary results are reported on shelf ice conditions, profiles of continental shelf and coastline, using seismic exploration. Magnetic and gravimetric measurements, as well as seismic refraction soundings were performed. Sediments of the Princess Martha coast are briefly discussed.

See also:
A-21175 A-21360 A-21363 A-21365 B-19251 B-19252 B-19253 B-19272 B-19364 B-19399 B-19519 B-19594 B-19595 B-19596 B-19597 B-19604 B-19605 B-19606 B-19607 B-19608 B-19609 B-19613 B-19614 B-19615 B-19616 B-19617 B-19618 B-19895 B-19979 B-20017 B-20036 B-20038 B-20040 B-20041 B-20042 B-20043 B-20044 B-20204 B-20222 B-20274 B-20491 B-20537 B-20538 B-20584 B-20606 B-20835 B-20843 B-20959 B-21060 B-21081 B-21101 B-21102 B-21103 B-21199 B-21348 B-21443 B-21447 B-21450 B-21472 B-21478 B-21516 B-21562 B-21579 B-21580 D-20019 D-20349 E-19254 E-19256 E-19258 E-19259 E-19260 E-19262 E-19263 E-19264 E-19281 E-19282 E-19286 E-19315 E-19316 E-19353 E-19354 E-19375 E-19376 E-19377 E-19418 E-19423 E-19509 E-19634 E-19635 E-19636 E-19637 E-19642 E-19643 E-19644 E-19645 E-19664 E-19665 E-19668 E-19671 E-19672 E-19740 E-19848 E-19849 E-19850 E-19851 E-19852 E-19869 E-19874 E-19875 E-19876 E-20008 E-20084 E-20137 E-20147 E-20358 E-20359 E-20360 E-20513 E-20563 E-20564 E-20565 E-20568 E-20569 E-20618 E-20631 E-20692 E-20719 E-20798 E-20803 E-20804 E-20807 E-20879 E-20902 E-20961 E-21005 E-21095 E-21096 E-21287 E-21558 E-21564 E-21565 E-21570 F-19676 F-19688 F-19689 F-19878 F-19915 F-20033 F-20113 F-20173 F-20247 F-20306 F-20374 F-20402 F-20448 F-20462 F-20463 F-20469 F-20471 F-20475 F-20479 F-20486 F-20487 F-20704 F-20705 F-20881 F-20907 F-21061 F-21094 F-21132 F-21226 F-21544 G-19726 G-19727 G-19734 G-19757 I-19343 I-19707 I-20202 I-20342 I-20425 I-20611 I-20613 I-20638 I-20643 I-20644 I-20646 I-20823 I-21106 I-21108 I-21188 I-21608 K-20285 L-19513 L-19871 L-20013 L-20014 L-20062 L-20687 M-20189

K. ATMOSPHERIC PHYSICS

K-19335
Roux, D., **Perturbation of upper ionospheric profile associated with the magnetospheric cleft in local summer in Antarctica** [Perturbation du profil de l'ionosphère supérieure antarctique en été local au niveau du cornet polaire], *Académie des sciences, Paris. Comptes rendus hebdomadaires des séances. Série B,* Oct. 3, 1977 285(7), p.183-186, In French with English summary. 5 refs.

A study of topside soundings provided at Dumont d'Urville Station by the ISIS 2 satellite during Dec. 1972 and Jan. 1973 has allowed the author to obtain a picture of anomalies of the upper ionosphere associated with the magnetospheric cleft. Calculation of effects on the ionosphere of cleft electron flux shows a rather good agreement with the observations. (Auth.)

K-19361
Ose, M., Yamakoshi, A., Sasaki, T., **Riometer records of 30 MHz cosmic noise at Syowa Station Antarctica in 1976,** *Japanese Antarctic Research Expedition. JARE data reports,* Nov. 1977 No.41, 87p., 9 refs.

Observations of cosmic radio noise at 30 MHz have been carried out at Showa Station since Feb. 1966 using a standard riometer. The method of measurement is briefly described. Ionospheric absorption data obtained by means of the riometer method are given in tables where the cosmic noise absorption is defined by the deviation of cosmic noise from its monthly reference level. The reference level is calculated from selected quiet diurnal variations in the month. The hourly values of the cosmic noise absorption are shown in dBm.

K-19371
Troitskaia, V.A., Bolshakova, O.V., **Diurnal latitude variation of the location of the dayside cusp,** *Planetary and space science,* Dec. 1977 25(12), p.1167-1169, 5 refs.

The properties of specific high-latitude pulsations (ipcl) reveal the existence of a significant diurnal variation in latitude of the position of the day side cusp. This systematic change of the position of the cusp during 24 hr must be taken into account when the rapid shiftings of the cusp connected with the changes of magnetic activity are studied. A method of determination of the position of the cusp using 22 ground stations, including 8 antarctic stations, is suggested. (Auth. mod.)

K-19384
Japan. Radio Research Laboratories, **Ionospheric data at Syowa Base (Antarctica). August 1961-January 1962, Ion. Ant.-6,** Mar. 1969, 64p.

The data are presented in the form of graphs showing monthly median characteristics and tables showing the ionospheric parameters, f0F2, f0E, f0Es, f-min, h'F, h'E, and h'Es. Characteristics of the ionosonde are listed. Explanations of symbols and terminology are included.

K-19385
Japan. Radio Research Laboratories, **Ionospheric data at Syowa Base (Antarctica). July 1971-December 1971, Ion. Ant.-17,** 1972, 74p.

For abstract see K-19384.

K-19386
Japan. Radio Research Laboratories, **Ionospheric data at Syowa Station (Antarctica). July 1972-December 1972, Ion. Ant.-19,** 1973, 74p.

For abstract see K-19384.

K-19387
Japan. Radio Research Laboratories, **Ionospheric data at Syowa Station (Antarctica). July 1973-December 1973, Ion. Ant.-21,** 1974, 74p.

For abstract see K-19384.

K-19388
Japan. Radio Research Laboratories, **Ionospheric data at Syowa Station (Antarctica). January 1974-June 1974, Ion. Ant.-22,** 1975, 80p.

For abstract see K-19384.

K-19389
Japan. Radio Research Laboratories, **Ionospheric data at Syowa Station (Antarctica). January 1975-June 1975, Ion. Ant.-24,** Dec. 1969, 80p.

For abstract see K-19384.

K-19392
Japan. Radio Research Laboratories, **Ionospheric data at Syowa Station (Antarctica). February-July 1966,** Ion. Ant.-7, Dec. 1969, 64p.

The data are presented in the form of graphs showing monthly median characteristics and tables showing the ionospheric parameters, f0F2, F0E, f0Es, f-min, h'F, h'E, and h'Es. Characteristics of the ionosonde are listed. Explanations of symbols and terminology are included.

K-19422
Andrews, M.K., Thomson, N.R., **Doppler shifts on whistler mode signals received at Siple Station, Antarctica,** *Geophysical research letters,* Oct. 1977 10(4), p.399-401, 10 refs.

A VLF receiver at Siple Station during 1975 recorded the Doppler shift on whistler mode signals from NAA, Cutler, Maine. An initial analysis of the data shows that signals could be received at any hour of the day during southern winter. On the dayside, the Doppler shift frequently showed large oscillations, due to pulsations in the Pc4-5 range. On average, a well-defined diurnal pattern of shifts was found. This pattern supports some features of recent measurements of the convection electric field in the plasmasphere, and also suggests that the quiet plasmasphere near L=3 refills by 10 to the 17th power el/sq m/day for the entire tube between the 1000 km levels. (Auth.)

K-19427
Fukunishi, H., **Aurora topic of antarctic research** [Watakushi na Nankyoki kenkyuki: Orora], *Polar news (Kyokuchi),* Jan. 1976 No.22, p.39, In Japanese.

The author attempted to study the proton aurora, difficult to observe because of the predominance and brightness of electrons.

He used an interferofilter on the whole-sky camera to catch the brighter rays of the proton aurora, and, to determine the progress of the proton aurora through space, he scanned the sky very rapidly with a narrow-scope telescope. The results shed light on the development processes of both proton and electron auroras and on magnetic plasma conditions.

K-19453

Sandford, B.P., **Auroral research applied to radio communication** [Auroraforschung—Anwendung auf Radioverbindungen], *Umschau.* Apr. 1, 1966 No.7, p.232, In German. 3 refs.

Auroral studies made by the author in New Zealand and at the Arctic Institute of North America are discussed. Two types of auroras are considered: the mantle aurora and the polar glow aurora. Auroral spectra obtained at Scott Base show that solar proton streams entering the atmosphere are responsible for both polar glow auroras and polar cap absorption. Mantle auroras are detectable by sensitive optical instruments over the entire sky; their radiation, averaged over a length of time, is stronger than that of visible auroras and it may affect long-distance radio communication considerably. Thus, optical studies may usefully complement radio frequency analyses in radio communication research.

K-19478

Dudeney, J.R., Jones, T.B., Kressman, R.I., Spracklen, C.T., **Radio wave Doppler studies of the antarctic ionosphere,** *Royal Society of London. Philosophical transactions,* 1977 Vol.279B, p.239-246, 11 refs.

The occurrence of propagating wave-like disturbances in the atmosphere at ionospheric heights is well documented, but their causes and role in the energy balance of the atmosphere is poorly understood. This paper describes an experiment deployed in the Antarctic Peninsula region to investigate the morphology of the various classes of disturbance, with particular emphasis on the identification of their sources. Current knowledge of the phenomena is briefly reviewed and the reasons why observations in the peninsula region may be especially valuable are discussed. Some preliminary results from the first 3 months of operation are presented; these indicate the presence of waves with periods ranging from less than 1 min to more than 90 min. The short period waves (1-5 min) are unusually common in these data. (Auth.)

K-19480

Piggott, W.R., **Importance of the Antarctic in atmospheric sciences,** *Royal Society of London. Philosophical transactions,* 1977 Vol.279B, p.275-285, 28 refs.

A prime objective of atmospheric science research in Antarctica is to use the special conditions found there to throw new light on global problems and, in particular, to test theories of the dynamics of the environment and its reactions to solar phenomena. This involves much international collaboration in planning, data collection and analysis, which is briefly described. The British Antarctic Survey theatre of operations is geographically and magnetically unique and therefore offers exceptionally favorable conditions for such tests. The development of new instruments, in particular those carried by satellite, has made research possible in uninhabited regions and enabled problems to be studied which were previously impracticable. The objects of this paper are to draw attention to the needs and possibilities, and to show some of the ways in which the specific investigations discussed by other contributors interact. (Auth.)

K-19496

Mikirova, N.A., Pereiaslova, N.K., **Characteristics of proton distribution in the polar caps during the September 7, 1973 intrusion** [Osobennosti prostranstvennogo raspredeleniia protonov v poliarnykh shapkakh vo vremia vtorzheniia 7 sentiabria 1973 g.], *Moscow. Institut prikladnoĭ geofiziki. Trudy,* 1976 No.30, p.53-56, In Russian. 2 refs.

Graphs showing distribution of protons with energy greater than 90 MeV in the northern and southern polar caps are given. Comparing them reveals a north-south asymmetry in intensity. Apparently there is an unequal distribution of proton flows with pronounced auroral, polar and cusp peaks during that period of the intrusion during which the particle flow is anisotropic. This is effected by solar proton mechanisms that are unique to the high latitudes.

K-19546

Kressman, R.I., **Riometer studies at South Georgia,** *British Antarctic Survey. Bulletin,* Nov. 1976 No.43, p.15-23, 17 refs.

A riometer at South Georgia, a station affected by the South Atlantic geomagnetic anomaly, has revealed no absorption events during 1971 attributable to D-layer ionization caused by particle precipitation. A new technique for separating the D-region component of absorption and the F-region component in riometer data has been developed using ionosonde fm2 data. The two components are comparable in summer months. The relation between foF2 and the F-region component is consistent with an electron-ion collision absorption mechanism in the F-region. (Auth.)

K-19571

Kanonidi, Kh.D., Osipov, N.K., **Magnetic quiet-day solar daily variations in magnetically conjugate regions,** *Geomagnetism and aeronomy,* 1977 17(2), p.191-193, Translated from Geomagnetizm i aeronomiia.

Sq variations are investigated on the basis of data from Kerguelen and several mid-latitude stations of the Northern Hemisphere. It is assumed that the variations in the structure of the Sq field at mid latitude are associated with variations of the interplanetary magnetic field. (Auth.)

K-19575

Reid, J.S., **Ionospheric origin for Pi 1 micropulsations,** *Planetary and space science,* July 1976 24(7), p.705-710, 9 refs.

Cosmic noise absorption pulsation events observed with fast response riometers at Macquarie Island in the southern auroral zone have almost always been accompanied by Pi 1 micropulsations. A cross-spectral analysis of fast response riometer data and vertical component induction magnetometer data for one such event showed that, after the low frequency components are removed, the absorption A(t) is better correlated with the absolute value of the field Z(t) than with the recorded quantity dZ/dt. The peaks in Z(t) lag those in A(t) by one second while A(t) lags dZ/dt by about a second. Furthermore, many of the pulsations in Z(t) show a similar time asymmetry to that commonly observed in c.n.a. pulsations, viz. a more rapid onset time than decay time. These results are taken as evidence that the Pi 1 micropulsations observed from the ground during the recovery phase of an auroral substorm are brought about by fluctuations in the ionospheric currents which give rise to the magnetic bay, these fluctuations being due to conductivity changes resulting from particle precipitation. The lag between A(t) and Z(t) is attributed to the self-inductance of the electrojet. (Auth.)

K-19710
Katsufrakis, J., **Experiment communication and data transmission through the ATS-3 synchronous satellite,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.178-180.

The use of the Applications Technology Satellite (ATS) on a continuing basis for communication between Siple and its conjugate station Roberval and the home laboratory at Stanford U. is discussed and illustrated. Roberval is the main observation point for the whistler-mode signals from the Siple transmitter. With the use of real time communications between Roberval and Siple, the Roberval observer may now take direct part in an experiment as it develops, judging the success of parameter choices at Siple and recommending changes in strategies as needed. It is planned to use ATS-3 in conjunction with balloon and rocket programs at Roberval and Siple, and also in conjunction with the International Sun-Earth Explorer satellite, which will carry a Stanford U. VLF receiving experiment.

K-19711
Helliwell, R.A., Katsufrakis, J.P., Park, C.G., Carpenter, D.L., **Siple/Roberval VLF transmitting experiments,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.180-182, 3 refs.

Earlier studies using the Siple transmitter led to the recognition that harmonic radiation from power distribution systems may play a major role in the production of VLF magnetospheric noise. Siple/-Roberval VLF transmitting experiments conducted to further investigate power line radiation are summarized and examples given. Spectrograms are reproduced showing the activation of a several-minute-long VLF noise event by frequency ramps transmitted from the Siple transmitter and by the echoes of a lightning induced whistler. Striations can be seen within the noise event which indicate the influence of power line radiation. Other examples show results from a 1973 experiment in which bursts of VLF noise recorded at Siple were correlated with amplitude variations in fixed frequency VLF signals, and a similar noise event recorded at Roberval in 1977 which appeared to be initiated by signals from the Siple transmitter.

K-19712
Rosenberg, T.J., **Electron precipitation associated with very low frequency chorus and thunderstorm electric fields,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.182, 1 ref.

Data from observations of electron precipitation and VLF radiowave emissions at Siple and Roberval during a magnetic substorm on July 15, 1975 reveal a detailed correlation between microburst-like electron precipitation above Roberval and 2-4 kilohertz risers (chorus) recorded at Siple. The data appear to confirm that electron microburst and associated VLF chorus originate in near-equatorial cyclotron resonance interactions. Some aspects of the interrelationship of magnetospheric substorm-associated electron precipitation and thunderstorm electric fields as determined from a balloon flight at Roberval on July 9, 1975 are summarized.

K-19713
Balsley, B.B., Ecklund, W.L., Carter, D.A., **Dual coherent auroral radar observations from Siple Station, Antarctica,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.183-184, 3 refs.

A dual coherent 50-megahertz auroral radar was installed at Siple Station in Dec. 1976 to study backscattering from electron density irregularities in the E-region. The radar provides information on the location and intensity of the auroral electrojet currents and the magnitude of the driving electric fields. The operation and capabilities of the system are discussed. The antenna beam configuration, a film record of the backscattered signal intensity as a function of range and time obtained from the south-pointing system on Jan. 29, 1977 at 0800 UT, and an example of power and mean Doppler profiles obtained on the south antenna at 0808:42 UT on Jan. 29, 1977 are shown.

K-19714
Arnoldy, R.L., Lewis, P.B., Jr., Cahill, L.J., Jr., **Polarization studies of Siple-Roberval Pc 1 micropulsations,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.184-186.

Conjugate Siple-Roberval polarization data for two events are displayed and discussed. The data show that the dynamic spectrum of the total power is quite similar at the conjugate sites, but the polarization can be quite different. Undoubtedly the ionosphere strongly influences the polarization of the signals detected. Although the analysis has not been completed, it appears that both Siple and Roberval will see more right polarization than left.

K-19715
Lanzerotti, L.J., Maclennan, C.G., Evans, C., **Magnetic fluctuations and ionosphere conductivity changes measured at Siple Station,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.186-189, 9 refs.

This report summarizes research on magnetic field fluctuations at Siple Station and their relationship to changes in the absorption of cosmic radio noise by the ionosphere. One-minute values of the magnetic field measurement and the riometer voltage are plotted for an 11-hr interval on July 9, 1975. Also plotted are 10-minute values of the correlation coefficients and standard deviations between the riometer variations and each of the magnetometer variations. Examples of the correlation between the riometer and magnetometer data can be seen in the figure. Comparison of the Siple data with that from the northern hemisphere area conjugate to Siple leads to the conclusion that the changes in the ionosphere conductivity, as measured by the Siple riometer, were produced by particle precipitation into the ionosphere above Siple rather than by changes in the electric field in the ionosphere. The particle precipitation into the ionosphere was apparently asymmetric in the magnetosphere, being more periodic and more intense over Siple than over the northern hemisphere during the period studied.

K-19716
Dudeney, J.R., Jones, T.B., **Simultaneous occurrence of short period ionospheric and magnetic oscillations in Antarctica,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.189-191, 9 refs.

Observations of very short period oscillations (periods of about 1 min) made during a high frequency doppler experiment are described. The receivers are located at Argentine Is. and transmitters at Palmer, Adelaide, and Almirante Brown stations. A typical recording of doppler frequency changes measured on two transmitting frequencies in shown. A portion of a La Cour magnetogram, recorded at Argentine Is. on the day in question, on which small oscillations can be seen whose times of commencement and cessation agree exactly with those of the doppler events is also shown. The small rapid fluctuations are thought to be Pi2 magnetic pulsations. The correspondence between rapid doppler oscillations and magnetic oscillations is a consistent feature of the data analyzed so far. Possible mechanisms for this link are discussed.

K-19717
Heacock, R.R., **Signatures of magnetic field pulsation activity,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.191-193, 7 refs.

Investigations of the broadband frequency-time signatures of Pi bursts at widely spaced sites and on satellites are discussed. Data recorded at Vostok are being analyzed in conjunction with ground-based recordings taken at College, Macquarie I., Thule, several sites in Fin-

land, and with data recorded on satellites. Pi 2 events, or Pi bursts, are generally thought to be related to substorm onsets. The present work has disclosed the following new findings related to Pi bursts: (1) Though most Pi bursts maximize in the night sector of the auroral oval and presumably originate in the magnetotail, some originate in the interplanetary medium. (2) Some observed Pc 3-4 activity originates in these Pi bursts of interplanetary origin, the Pi 1 component being attenuated as the event propagates onto closed field lines. (3) Many Pi bursts that originate in the magnetotail propagate to the dayside and to the pole sites with clear impulse signatures that might be confused with sudden impulses of solar wind shock origin if only dayside data were available. (4) Some Pi burst events actually consist of several bursts with separation of one to several minutes between bursts. (5) Some forms of low amplitude Pi activity observed at dayside and pole sites consist of swarms of sudden impulses like weak si's.

K-19718

Wood, J.D., Johnson, R.N., **Magnetospheric dynamics programs at Vostok Station,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.194.

Operations at Vostok from Jan. 1976-Jan. 1977, reported by a U.S. exchange scientist, included a U.S. Geological Survey ultra low frequency micropulsation program, a micropulsation program carried out for the University of Alaska, and a riometry program operated for the National Oceanic and Atmospheric Administration. The ULF program involved the continuation of a study of geomagnetic-field fluctuations from 5.0 to 0.003 hertz at Vostok. The activities of each program are briefly summarized.

K-19719

Chivers, H.J.A., **High-latitude ionospheric absorption,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.194-195.

Operations were suspended at Siple during 1976, but absorption measurements were continued at the conjugate station near Roberval. An analysis technique, based on numerical integration of digital records, was developed and applied to test records from Siple to show that variation in absorption as small as 0.003 db were detectable with the new system. A high pass filter was installed on the Siple equipment to improve detection of fluctuating events. Analysis of absorption records from South Pole station and the conjugate station at Frobisher Bay have shown that the effect is due to a precipitation process initiated by high energy particles occupying a narrow region above the observing station. As part of the cooperative U.S.-U.S.S.R. program, new equipment for the measurement of ionospheric absorption was installed at Vostok Station.

K-19720

Akasofu, S.-I., **Auroras in the cusp region,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.195-196, 2 refs.

The results from analysis of photographs taken simultaneously from the South Pole and from Defense meteorological satellite program (DMSP) satellites are presented. It was surprising to find that the midday part of the auroral oval, or cusp region, is devoid of discrete auroral arcs in many DMSP photographs. Detailed examination shows that patches or isolated rays are almost always present in the gap in the midday sector of the auroral oval although sometimes too faint to be clearly photographed. A new finding is that even an extremely bright discrete arc is always abruptly truncated near the boundary of the cusp region and does not extend into the midday sector. It was also found that auroras in the cusp region sometimes aline radially, converging to or diverging from a point along the noon meridian.

K-19721

Barcus, J.R., **Rocket measurements of energy deposition in the atmosphere by auroral X-rays,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.196-198, 3 refs.

This program involves coordinated rocket and balloon measurements aimed at identifying the specific response of selected electrical parameters and minor constituents to particle and x-ray bombardment of the atmosphere. Preliminary results pertaining to energy deposition by bremsstrahlung x-rays are reported, and the instrument complement is described. The results suggest that transient ionization effects due to bremsstrahlung x-rays are sufficient to significantly increase mesospheric conductivity at high latitudes. Moreover, when the primary electron spectrum possesses a hard component, the associated bremsstrahlung can deposit sufficient energy at upper stratospheric levels to lower the classical electrosphere.

K-19722

Pomerantz, M.A., Duggal, S.P., **Cosmic ray intensity variations,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.198-199, 4 refs.

Cosmic ray data recorded at McMurdo and Thule have clearly revealed a field-dependent asymmetry, thus establishing the presence of a radial gradient. Calculations based upon these measurements show that the magnitude of this gradient is about 2 percent per astronomical unit. A search for other interplanetary processes that can affect the cosmic ray intensity has revealed that solar wind streams are the principal cause of transient variations. New cosmic ray sensors were installed at Amundsen-Scott Station during the 1976-77 austral summer.

K-19723

Clynch, J.R., Supp, H.L., Tucker, A.J., **Radio scintillation studies,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.199-200, 5 refs.

Doppler data collected over several years at the geodetic satellite observatory at McMurdo have been analyzed to determine the characteristics of the ionospheric scintillations over the polar cap and compared with similar data at Thule. The scintillation value (Sv) contour plots show a peak near the stations although this effect is clearer at McMurdo than at Thule. The peaks in Sv correspond to regions where the line of sight and magnetic field are alined. Thus the peak is consistent with highly field-alined irregularities. Scintillations occur frequently in both polar regions. Averaged over all seasons, the frequency of occurrence of scintillations (FOS) is greater than 30% over the northern polar cap for all geometries, and above 45% over the southern polar cap for most geometries. There is also a seasonal dependence, with scintillations being stronger and occurring more frequently in local winter over both polar caps. In local summer, the FOS is 15% or lower away from the horizons and the field-alined geometries in both regions.

K-19724

Wilson, C.R., **Auroral infrasonic waves observed at Windless Bight, Antarctica,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.200-202, 6 refs.

The morphology of auroral infrasonic waves (AIW) observed at Windless Bight for 10 days of a 45-day observation period is described. The AIW at Windless Bight are observed in the dawn sector propagating from a range of azimuths that extend from 150 deg parallel to the auroral oval in an east to west direction to transverse to the oval in a poleward direction. This is in direct contrast to observations at the three northern hemisphere stations Palmer, Alaska, College, and Inuwik, where the AIW in the dawn sector are propagating from west to east and transverse to the oval in an equatorward direction. A tentative explanation of the observations at Windless Bight is that the AIW in the dawn sector propagating from east to west are due to westward propagating surges that move into the dayside sector of the

auroral oval up to local times as great as 1030, as observed on South Pole station auroral photographs.

K-19728

Warburton, J.A., **Satellite link between Palmer Station and Nevada,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.206.

A very high frequency (VHF) satellite communications system has been built and installed to operate between Palmer Station and Reno, Nevada. The communications link uses VHF transponders aboard the NASA Applications Technology Satellite 3 (ATS-3). The installations at Palmer and the Desert Research Inst. each consist of a VHF transmitter-receiver, modem, and a six-turn helical antenna that provides right-hand circular polarization. The system has voice, telecopy, and digital data transmission capability.

K-19739

Doisy, P., Picard, A., **Visual observations of auroras: Dumont d'Urville Base** [Observations visuelles des aurores: Base Dumont d'Urville], *Expéditions polaires françaises. Missions Paul-Emile Victor. Publication,* Aug. 1977 No.345, 116p., In French and English.

This report covers observations from March to September 1976. Starting on the hour, records reflect observations at 15 min. intervals, and are presented in tabular form, in five columns, giving: hour, UT; state of sky; description of aurora, by IQSY standards; coordinates; and remarks.

K-19743

Caywood, L.P., U.S. Coast and Geodetic Survey, **Sky-Hi Station report, Dec. 1961-Feb. 1962,** Washington, 1962, 24p.

This report discusses the construction and operation of the temporary magnetic observatory at Eights Station from Dec. 1961 to Feb. 1962. The report is divided into the following sections: building construction; power lines; position and azimuth; variation instrument; absolute instruments; time control; magnetic survey; and recommendations for similar projects in the future.

K-19776

Kovrazhkin, R.A., **Structure of the bursts of auroral protons,** *Cosmic research,* Jan.-Feb. 1976 14(1), p.47-53, 26 refs. Translated from Kosmicheskie issledovaniia.

DLC QB500.K63

Characteristics of precipitating protons in the near-midnight sector of local magnetic time in the auroral zone are examined on the basis of measurements made by the satellite Cosmos 348. Analysis of the results shows that the maximum or proton precipitation during magnetically quiet times is observed with an almost isotropic pitch-angle distribution near the equatorial boundary of the mean H-alpha airglow zone. It is found that during the substorm on June 26, 1970, the precipitation zone was divided into two regions: (1) a high-latitude region, where longitudinal fluxes of low-energy protons were observed, and (2) a low-latitude region, where fluxes of protons with energies of 4 to 8 keV and an isotropic pitch-angle distribution were detected. These findings are interpreted in terms of plasma convection under the action of the electric field in the magnetotail and the formation of a neutral line with an X-point at the time of the substorm. (Auth.)

K-19803

Sastri, J.H., Titheridge, J.E., **Depressions in midlatitude F-region under relatively quiet geomagnetic conditions,** *Journal of atmospheric and terrestrial physics,* Nov./Dec. 1977 39(11/12), p.1307-1316, 29 refs.

A study is made of the depressions in day time midlatitude F-region electron density under relatively quiet geomagnetic conditions, through a detailed analysis of five specific events, using total electron content data at Auckland and Invercargill and f0F2 data at Auckland, Christchurch, Campbell Island and several Australasian stations. In peak density, the depressions are noticed to have a latitudinal extent from about 27 deg to 53 deg with prominent effects at latitudes around 40 deg and with a longitudinal extent of about 3000 km. Based on the complementary experimental results from ionogram analysis and total electron content measurements at Auckland, it is suggested that the depressions studied here, all of which have been noticed to occur in association with auroral disturbances are due to changes in atmospheric neutral composition brought about by modifications in the global thermospheric circulation pattern following heating in the auroral zone. (Auth.)

K-19804

Duthie, D.D., Scourfield, M.W.J., **Aurorae and closed magnetic field lines,** *Journal of atmospheric and terrestrial physics,* Nov./Dec. 1977 39(11/12), p.1429-1434, 13 refs.

The positions of auroral forms imaged by a TV system at SANAE are compared with the positions of field lines along which whistlers propagate. Diffuse aurora occurs on closed field lines and indirect evidence shows that this is also the case for pulsating aurora. For two periods of data the separation of diffuse aurora from the plasmapause ranges from less than 0.9 to less than 0.2 L but during a third period the diffuse aurora lies, at least partially, within the plasmasphere. (Auth.)

K-19872

Essex, E.A., **High to low latitude variations in the evening summer total electron content and F-region electron density,** *Journal of atmospheric and terrestrial physics,* Sep./Oct. 1977 39(9/10), p.1155-1158, 6 refs.

Many workers have reported evening increases in total electron content during the summer. In this paper an attempt is made to compare the latitude variation on a day to day basis using geostationary satellite data as well as foF2. It is found that on a day to day basis evening increases at higher latitudes are usually accompanied by large enhancements at low latitudes. Measurements of neutral air winds and plasma influx are required to determine the relative importance of these two processes. Data from Campbell and Macquarie Islands are included in the analysis. (Auth. mod.)

K-19873

Gurnett, D.A., Green, J.L., **On the polarization and origin of auroral kilometric radiation,** *Journal of geophysical research,* Feb. 1, 1978 83(A2), p.689-696, 18 refs.

Observations of radio emissions by the Hawkeye I satellite at low altitudes over the southern hemisphere have now provided measurements at radial distances from about 1.5 to 2.5 RE along the auroral field lines, in the region where the intense nightside auroral kilometric radiation is believed to be generated. These measurements provide new evidence on the mode of propagation and origin of the auroral kilometric radiation. Most of the data were obtained via the French telemetry station at Terre Adélie near the south magnetic pole. Observations provide a strong indication that the auroral kilometric radiation is right-hand polarized in agreement with previous conclusions made on the basis of the angular distribution of this radiation. The observations also suggest that the generation of the whistler mode auroral hiss and the escaping auroral kilometric radiation are very closely related. Possible mechanisms which could produce strong coupling between the whistler mode and the escaping free space electromagnetic modes are discussed. (Auth. mod.)

K-19889
Shumilov, I.A., **Vertical ionospheric soundings at Molodezhnaya Station** [Vertikal'noe zondirovanie ionosfery v AMTs Molodezhnaia], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten'*, 1977 No.96, p.46-53, In Russian. 8 refs.

Results of vertical ionospheric soundings taken at Molodezhnaya Station from May to November 1974 are presented in graphs and discussed. Readings done for the same period at Dixon are compared and the effect of solar activity on both is considered.

K-19898
Haggard, R., Gledhill, J.A., **Observations of the ionosphere over the South Atlantic Ocean,** *South African journal of antarctic research,* 1976 Vol.6, p.14-18, 7 refs.

Observations from a shipborne ionosonde at Gough Island are presented for a 21-day period, extending from Oct. 13 to Nov. 2, 1975. The maximum median foF2 value was found to be 9.2 MHz, while the minimum median foF2 value was 3.2 MHz. A comparison with four surrounding stations is made. Observations were also made during the voyages from Cape Town to Gough Island and back for Oct./Nov., 1975 and Aug./Sep., 1976. The observations show a marked increase in foF2 as recorded on board ship when compared to observations made at Grahamstown, with a maximum increase of 5 MHz. (Auth.)

K-19904
Sutcliffe, P.R., **Note on the daily variation of the geomagnetic vertical intensity at Marion Island,** *South African journal of antarctic research,* 1976 Vol.6, p.32-34, 11 refs.

Significant phase shifts occur in the daily variation of the geomagnetic vertical intensity at Marion Island. These phase shifts are not due to the "island effect," as previously reported, but are brought about by the L2 (Z) variation and are functions of the lunar phase angle. (Auth.)

K-19909
Kersley, L., Klobuchar, J.A., **Comparison of protonospheric electron content measurements from the American and European sectors,** *Geophysical research letters,* Feb. 1978 5(2), p.123-126, 17 refs.

Average protonospheric electron contents, line integral measurements determined from observations of the ATS-6 satellite radio beacon at Hamilton, U.S.A., and Aberystwyth, U.K., are compared. It is shown that the two sets of data would be expected to be representative of measurements obtained at mid-latitude stations in North America and Europe respectively. The American protonospheric content magnitudes are lower than those from Europe and show a diurnal variation maximizing at night in winter through equinox in contrast to the daytime maximum found consistently in the Aberystwyth data. It is suggested that the differences may be interpreted in terms of ionospheric/protonospheric interactions in both local and conjugate hemispheres and the similarities in the forms of the diurnal variation of the American results with those of peak density in the subantarctic conjugate ionosphere are noted. (Auth.)

K-19911
Park, C.G., Helliwell, R.A., **Whistler precursors: a possible catalytic role of power line radiation,** *Journal of geophysical research,* Sep. 1, 1977 82(25), p.3634-3642, 14 refs.

Whistler precursors are discrete rising tone emissions that precede two-hop whistlers, starting shortly (0.1-0.3 s) after the one-hop delay. New data from Siple Station and Roberval, Quebec, are introduced suggesting that precursors start at power line harmonics (PLH) from the Canadian electrical power system. To explain precursor triggering, a new two-stage mechanism is proposed in which the upgoing whistler interacts through longitudinal resonance with energetic electrons, thus modifying their distribution function. These electrons then interact through cyclotron resonance with the backward traveling PLH waves, causing these waves to grow to the level where they can trigger precursors. The PLH thus acts as a kind of catalyst in converting a particle perturbation to a backward traveling wave. This explanation, if correct, opens up a new realm of study in which whistler mode waves can be used to create a temporary perturbation in the energetic particle distribution. Such control is needed to conduct experiments on the factors (anisotropy, flux) that affect wave-particle interactions in the magnetosphere. (Auth.)

K-19912
Mizera, P.F., Fennell, J.F., **Satellite observations of polar, magnetotail lobe, and interplanetary electrons at low energies,** *Reviews of geophysics and space physics,* Feb. 1978 16(1), p.147-153, 25 refs.

Low-altitude satellite observations of the low-energy electron fluxes that populate the north and south polar regions are summarized and classified into two groups: class 1, the very low intensity distributions, and class 2, the more intense, often structured distributions observed during magnetically disturbed conditions. High-altitude observations of electron fluxes, including the solar wind and the tail lobes, are presented to suggest that class 1 observations are the result of direct access of interplanetary electrons through the lobes into the polar regions. Class 2 observations may be due in part to magnetospheric processes. (Auth.)

K-19961
Japan. Radio Research Laboratories, **Ionospheric data at Syowa Base (Antarctica). August 1960-January 1961, Ion. Ant.-4,** Feb. 1968, 70p.

For abstract see K-19384.

K-19962
Japan. Radio Research Laboratories, **Ionospheric data at Syowa Base (Antarctica). August 1967-January 1968, Ion. Ant.-10,** Feb. 1971, 54p.

For abstract see K-19384.

K-19963
Japan. Radio Research Laboratories, **Ionospheric data at Syowa Base (Antarctica). August 1968-January 1969, Ion. Ant.-12,** Sep. 1970, 62p.

For abstract see K-19384.

K-19964
Japan. Radio Research Laboratories, **Ionospheric data at Syowa Base (Antarctica). February-July 1969, Ion. Ant.-13,** [Sep. 1969], 62p.

For abstract see K-19384.

K-19965
Japan. Radio Research Laboratories, **Ionospheric data at Syowa Base (Antarctica). August 1969-January 1970, Ion. Ant.-14,** [Apr. 1970], 60p.

For abstract see K-19384.

K-19966
Japan. Radio Research Laboratories, **Ionospheric data at Syowa Base (Antarctica). February 1970-January 1971, Ion. Ant.-15,** Apr. 1972, 130p.

For abstract see K-19384.

K-19967
Japan. Radio Research Laboratories, **Ionospheric data at Syowa Station (Antarctica). January 1971-June 1971, Ion. Ant.-16,** Dec. 1972, 67p.

For abstract see K-19384.

K-19968
Japan. Radio Research Laboratories, **Ionospheric data at Syowa Station (Antarctica). January 1973-June 1973, Ion. Ant.-20,** [Sep. 1973], 74p.

For abstract see K-19384.

K-19969
Japan. Radio Research Laboratories, **Ionospheric data at Syowa Station (Antarctica). July 1974-December 1974, Ion. Ant.-23,** [Mar. 1975], 80p.

For abstract see K-19384.

K-19970
Japan. Radio Research Laboratories, **Ionospheric data at Syowa Station (Antarctica). July 1975-December 1975, Ion. Ant.-25,** Mar. 1976, 80p.

For abstract see K-19384.

K-19971
Japan. Radio Research Laboratories, **Ionospheric data at Syowa Station (Antarctica). January 1976-June 1976, Ion. Ant.-26,** [Sep. 1976], 80p.

For abstract see K-19384.

K-20063
Miura, A., Sato, T., **Shear instability: auroral arc deformation and anomalous momentum transport,** *Journal of geophysical research,* May 1, 1978 83(A5), p.2109-2117, 16 refs.

Temporal evolution of a two-dimensional electrostatic shear instability is numerically studied with special attention to rotational deformation of auroral arcs and momentum transport across the magnetospheric boundary. It is found that the spatial structure of the growing vortex is in sound agreement with the small-scale auroral deformation called 'curl.' Spectral energies of fully developed electrostatic turbulence are also studied. It is found that the observed power spectral energies can well be represented by a power law of the form k-4. The observations of auroras were made in Alaska and at Showa Station.

K-20064
Brown, R.R., **On sudden commencement absorption events at the South Pole and their relation to the latitude of the lower cleft boundary,** *Journal of geophysical research,* May 1, 1978 83(A5), p.2205-2207, 8 refs.

From 7 years (1966-1973) of riometer data from the south pole 43 sudden commencements of magnetic storms were examined for sudden commencement absorption (sca) events and the possible influence of the lower cleft boundary latitude on electron precipitation at that site. For 17 of the events, interplanetary magnetic field (IMF) data are available to predict the position of the lower cleft boundary. Three of the sca events at the south pole occurred during IMF conditions when the predicted cleft boundary, including the effect of magnetic activity (AE), was equatorward of that site by 2-4 deg. The observation of sudden commencement electron precipitation at the south pole at these times indicates that the cleft region involves closed field lines. (Auth.)

K-20079
Shirochkov, A.V., **North-south asymmetry in the intensity of polar cap absorption,** *Geomagnetism and aeronomy,* 1977 17(3), p.301-303, Translated from Geomagnetizm i aeronomiia. 12 refs.

The latitudinal structure of absorption during the PCA event of April 18-19, 1972, is analyzed from the data of the chain of riometers in the Arctic and Antarctic. The effect of the north-south asymmetry in absorption intensity and that of the sector structure of the interplanetary magnetic field on the character of the latitudinal distribution of absorption are investigated. (Auth.)

K-20091
Shiro, I., Yamakoshi, A., Sasaki, T., **Records of radio aurora at Syowa Station, Antarctica in 1976,** *Japanese Antarctic Research Expedition. JARE data reports,* Feb. 1978 No.42, 105p.

Observations of aurora at Showa Station in 1976 using a radar system operating at 112.2 MHz are reported. The observers, method of measurement, characteristics of the system and an explanation of the tables are given. The tables show the operation time of the radar in 1976, and the relative field strengths and ranges of radio aurora echoes measured at Showa.

K-20099
D'Angelo, N., **On high-latitude CNA, G-lacuna and SEC,** *Annales de géophysique,* 1978 34(1), p.51-54, 15 refs.

High-latitude Cosmic Noise Absorption (CNA) events, F-lacunae and Slant E Condition (SEC) in polar cap ionograms are discussed in the light of a recently proposed mechanism of electromagnetic wave scattering by Farley-Buneman plasma waves in the lower E region. The observations were made at Dumont d'Urville Station and at Greenland stations. (Auth. mod.)

K-20100
Walker, A.D.M., **Formation of whistler ducts,** *Planetary and space science,* Apr. 1978 26(4), p.375-379, 17 refs.

A theory of whistler duct formation is presented. By means of order of magnitude calculations it is shown that when the ring current overlaps the outer plasmasphere, irregularities will cause field-aligned currents to flow, which are below the threshold sensitivity of satellite-borne magnetometers. These currents must be continuous with horizontal ionospheric currents, which produce horizontal electric fields. These fields map up to the equatorial plane and are large enough to produce flux tube interchange and hence the formation of whistler ducts in the outer plasmasphere. The type of whistler typical of a medium to high latitude station such as SANAE is described. (Auth. mod.)

K-20136
Berthelier, J.J., Pirre, M., **Observations of the entry of solar protons into the magnetosphere by use of riometers,** Space research XIV, Berlin, Akademie-Verlag, 1974, p.327-333, 12 refs.

DSI, QC801.S73 NASM

During the solar proton event of Jan. 28, 1967, the authors associated two sharp variations of the ionospheric absorption measured by riometers at a few stations in Antarctica with the passage of discontinuities of the interplanetary magnetic field, convected by the solar wind past regions where field lines from these stations are connected to interplanetary field lines through the magnetopause. For very low and moderate reconnection rates the ordered magnetotail length and the corresponding cross tail electric field are found to be 1050 R-sub-e and 500 R-sub-e, 0.00002V/m and 0.00015V/m respectively.

K-20167
Shirochkov, A.V., **Periodicity in Es occurrence probability at the polar caps** [Tsiklicheskie variatsii veroiatnosti poiavleniia Es v poliarnykh shapkakh], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1977 Vol.340, p.34-39, In Russian. 6 refs.

Several new morphological features of the sporadic E layer at the polar caps are described. It is demonstrated that from the pole to 84.5 deg magnetic lat the probability range for Es occurrence has one daytime maximum/24-hr period, while at 84.5 two maxima—one morning and one afternoon—are apparent. At Vostok two Es probability maxima are seen, at noon and at midnight. Also at 84.5 deg the sign of Es probability dependence on geomagnetic activity changes in the summer. The day-to-day variation in Es amplitude is studied as a function of level of solar activity.

K-20168
Ul'ev, V.A., **Time of peak noontime recovery effect** [Vremia nastupleniia pika effekta poludennogo vosstanovleniia], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1977 Vol.340, p.53-59, In Russian. 7 refs.

The question of the moment of peak effect of noontime recovery according to both solar and magnetic local time was studied on the basis of riometer data recorded during 15 PCA events manifesting noonday recovery from 1957-1972.

K-20170
Kuperov, L.P., **Intersection of geomagnetic force lines with the interplanetary magnetic field in the evening portion of the south polar cap** [O peresoedinenii geomagnitnykh silovykh liniĭ s mezhplanetnym magnitnym polem na vechernem uchastke poliarnoĭ shapki iuzhnogo polushariia], *Leningrad. Arkticheskiĭ i antarkticheskiĭ nauchno-issledovatel'skiĭ institut. Trudy,* 1977 Vol.340, p.82-92, In Russian. 6 refs.

Radio signal attenuation gradients in the evening portion of the southern polar cap from Mirnyy to Vostok were determined by measuring variations in the force field of mobile and stationary radiotransmitters at 6.244 MHz. A positive gradient and a decrease in the coefficient of negative gradient in the minus portion of the interplanetary magnetic field were observed from Mirnyy to Vostok. The author concludes that low-energy electrons enter the ionosphere more intensely when the IMF is negatively polarized.

K-20183
Unwin, R.S., Saito, T., Yumoto, K., **Measurement of the drift of auroral radar echoes with the radar auroragraph,** *Planetary and space science,* June 1978 26(6), p.519-524, 27 refs.

The auroragraph is a device for the analysis of any movements of patterns on movie films. Its application to the PPI record from an auroral radar is described, and examples from Showa Station are given. The radar auroragraph has advantages over other more conventional methods of deriving the speed and direction of movement of auroral radar echoes in space. (Auth.)

K-20215
Ho, D., Carpenter, D.L., **Outlying plasmasphere structure detected by whistlers,** *Planetary and space science,* 1976 24(10), p.987-994, Refs. p.993-994.

Whistlers recorded at Eights and Byrd have been used to study large-scale structure in equatorial plasma density at geocentric distances 3-6 RE. The observations were made during conditions of magnetic quieting following moderate disturbance. The structures were detected by a "scanning" process involving relative motion, at about one tenth of the Earth's angular velocity or greater, between the observed density features and the observing whistler station or stations. Three case studies are described, from March 26, 1965, May 11, 1965, and August 29, 1966. The cases support satellite results by showing outlying high density regions at 4-6 RE that are separated from the main plasmasphere by trough-like depressions ranging in width from 0.2 to 1 RE. The reported structures appear to be closely related to the bulge phenomenon. The present work supports other experimental and theoretical evidence that the dusk sector is one of major importance in the generation of outlying density structure. It is inferred that irregularities of the type reported here regularly develop near 4-5 RE during moderate substorm activity. This research suggests that at least a major class of the density structures that develop near 4 RE are tail-like in nature, joined to the main body of the plasmasphere.

K-20225
Rhodes University, Grahamstown, South Africa, **Monthly bulletin of ionospheric characteristics observed at SANAE Base, Antarctica,** Jan. 1965-Apr. 1967 (incomplete), 144p.

Hourly values are tabulated for foF2, foEs, fmin, fbEs, and h'F2, and where available, foF1, foE, h'F1, h'E and h'Es. The frequencies are given in Mc/s and the heights in km. The terminology and symbols used are described and conform to those recommended by the IGY Instruction Manual, 1957. The frequency range of the ionosonde is 1.0-18.0 Mc/s, with an error range of p/m 0.05 to p/m 0.5 Mc/s. Time is recorded as U.T. Quarterly hourly values of ionospheric characteristics, where available, may be obtained on application.

K-20235
Suzuki, A., **Geomagnetic Sq field at successive universal times,** *Journal of atmospheric and terrestrial physics,* Apr. 1978 40(4), p.449-463, 28 refs.

A method for analyzing the geomagnetic variation field at a fixed Universal Time (UT) is presented and applied to six quiet days in September, 1964. The method is based essentially on the so-called spherical harmonic analysis developed by Gauss, but some revisions are made so that it can be applied to a non-uniform and sparse distribution of observatories. Results of the analysis are shown in terms of equivalent current systems and some summarizing figures. The observations used for the analysis include Macquarie and Argentine Is. It is found that the UT variations are composed of two parts, a regular variation and an occasional one. The regular variation approximately corresponds to the usual Sq. The occasional variation occurs irregularly, and it lasts for a few to nearly ten hours. The cause of each variation is discussed. It is also found that the internal currents seem to flow much more freely than hitherto considered. (Auth. mod.)

K-20257
Cazeneuve, H., **Ionosphere-magnetosphere coupling** [El acoplamiento ionósfera-magnetósfera], *Antártida,* June 1975 No.6, p.25-29, In Spanish.

Illustrated with schematic colored drawings, this is one of a series of articles introducing the general reader to the rudiments of atmospheric physics. The electrical and magnetic characteristics of the atmosphere, especially as they result in the interaction of magnetosphere and ionosphere, are explained, and the importance of the polar regions for magnetic studies is discussed.

K-20258
Guerrero, G.E., **Polar auroras** [Las auroras polares], *Antártida,* June 1975 No.6, p.30-31, In Spanish.

Intended for the general reader, this discussion of auroras explains how they are studied and photographed, in what zones they are seen, and what causes them.

K-20281

Helliwell, R.A., **Active very low frequency experiments on the magnetosphere from Siple Station, Antarctica,** *Royal Society of London. Philosophical transactions,* May 26, 1977 279B(963), p.213-224, 24 refs.

VLF coherent waves transmitted from Siple Station provide a novel means for the study and control of the magnetosphere and ionosphere. Through cyclotron resonance the waves exchange energy with radiation belt electrons, causing wave growth, wave-wave interaction and modification of the distribution of electrons. The measured growth rates give information on the flux of energetic electrons along the path of propagation. Precipitation induced by VLF waves from lightning, ground transmitters and power grids, alters the ionosphere, affecting propagation and providing a controlled forcing function for the study of ionospheric processes. The active experiments are supported by the L=4 network of whistler stations in the Antarctic; they provide data on the distribution and movement of the magnetospheric plasma. (Auth. mod.)

K-20282

Kaiser, T.R., Orr, D., Smith, A.J., **Very low frequency electromagnetic phenomena: whistlers and micropulsations,** *Royal Society of London. Philosophical transactions,* May 26, 1977 279B(963), p.225-238, 54 refs.

Observations of natural electromagnetic phenomena, embracing frequencies ranging from millihertz to tens of kilohertz, have made a major contribution to our knowledge of the terrestrial environment extending out to many Earth radii. The Antarctic has offered exceptional opportunities in this field for a number of reasons, including: (1) the location of Antarctic bases at key magnetic latitudes, (2) magnetic conjugacy to Northern Hemisphere thunderstorm sources, (3) low interference levels. Important aspects of this research are the investigation of the role of wave-particle interactions in the magnetosphere and that of the structure and dynamical behavior of the plasmapause, using both passive and active techniques. Comparisons of observations made at antarctic stations and their northern geomagnetic conjugates show close similarities in dominant pulsation periods and demonstrate the uniqueness of the Weddell Sea area in relation to magnetospheric wave amplification at the higher frequencies. An extra dimension to this work is being added, during the International Magnetospheric Study (1976-8), through the development of a chain of stations employing the goniometer (direction-finding) technique pioneered at Halley Bay by Sheffield University. (Auth.)

K-20285

Boteler, D.H., **Effect of induced currents in the sea on magnetic bays observed at a coastal observatory,** *Journal of atmospheric and terrestrial physics,* May 1978 40(5), p.577-580, 18 refs.

It is widely accepted that return currents from the auroral electrojet are responsible for the magnetic bays in the D component. The different directions of the return currents, at either end of the electrojet, means that the sign of the D bay should change as the station moves from east to west of the central meridian of the electrojet. However, there is confusion as to whether this change occurs, giving rise to different models for the substorm current system. The possible effect of induced currents on magnetic bays is shown to be significant and should be examined for each observatory before using their magnetic bays to infer substorm current systems. An analysis of magnetic bays at Halley Bay, coastal site in Antarctica, shows that a change in the sign of D bays does not occur. It is shown that induced currents flowing in the sea, parallel to the coast, would have an effect that is consistent with the observations. (Auth.)

K-20291

Lanzerotti, L.J., ed, Park, C.G., ed, **Upper atmosphere research in Antarctica,** *American Geophysical Union. Antarctic research series,* 1978 Vol.29, 264p., Refs. For abstracts of papers see K-20292 through K-20299.

DLC QC807.6.A55U66

This volume reviews the highlights of recent upper atmosphere research in Antarctica with emphasis on the results of the U.S. Antarctica Research Program since about 1965. The volume consists of seven technical papers sandwiched between an introduction by the authors and a final chapter on the early history of upper atmosphere physics research in Antarctica. The entire collection of nine papers reveals the uniqueness of Antarctica as a locale for upper atmosphere research. The volume is timely, first, because it describes present research activities and their much increased sophistication in the last decade and, second, because the historical account brings to light much important research hitherto unpublished. In addition, it points the way for future research.

K-20292

Pomerantz, M.A., **Cosmic rays,** *American Geophysical Union. Antarctic research series,* 1978 Vol.29, Upper atmosphere research in Antarctica, edited by L.F. Lanzerotti and C.G. Park, p.12-41, 52 refs.

DLC QC807.6.A55U66

This review concentrates on the role of cosmic rays in the study of solar-terrestrial relations. The special importance of the Antarctic stems from the control exercised by the magnetosphere on their trajectories in the vicinity of the earth. In particular, polar cosmic ray research exploits the strategic location of certain antarctic stations for utilizing cosmic rays as space probes for studying phenomena in regions extending from the magnetosphere through the interplanetary medium to the sun itself. The discussion of representative results of work carried out mainly over the past decade is preceded by an outline of the factors that are involved in extrapolating observations at the earth to free space. Following an introduction and historical background the following topics are discussed: interpretation of observations; probing the magnetosphere; solar control of cosmic ray flow patterns; galactic cosmic ray intensity variations; transient modulations; and solar cosmic radiation.

K-20293

Rosenberg, T.J., Barcus, J.R., **Energetic particle precipitation from the magnetosphere,** *American Geophysical Union. Antarctic research series,* 1978 Vol.29, Upper atmosphere research in Antarcticaa, edited by L.F. Lanzerotti and C.G. Park, p.42-71, Refs. p.69-71.

DLC QC807.6.A55U66

Contributions since about 1965 of U.S. research activities in Antarctica and conjugate regions to the study of particle precipitation from the magnetosphere are reviewed, with emphasis on electrons with energies greater than about 15 keV. Section 1 gives introductory material. Section 2 describes the principal methods of detection: riometer and bremsstrahlung X rays. In section 3 several aspects of energetic electron precipitation associated with magnetospheric substorms are discussed, including the global development of large-scale features. In section 4 electron precipitation effects associated with storm sudden commencements and sudden impulses in the geomagnetic field are considered. The results of research on subauroral particle precipitation, including artificially stimulated effects produced by active experiments, are reviewed in section 5. The concluding section discusses future directions for the continuation of particle precipitation studies in Antarctica and conjugate regions.

K-20294

Park, C.G., Carpenter, D.L., **Very low frequency radio waves in the magnetosphere,** *American Geophysical Union. Antarctic research series,* 1978 Vol.29, Upper atmosphere research in Antarctica, edited by L.F. Lanzerotti and C.G. Park, p.72-99, Refs. p.96-99.

DLC QC807.6.A55U66

This paper examines very low frequency (approx 100 Hz to 100 kHz) wave phenomena and their applications as diagnostic tools in magnetospheric research. Antarctica is ideally suited for VLF research due to low levels of both man-made and natural electromagnetic noise such as sferics, low ionospheric absorption during long winter nights, and exceptionally high whistler rates. The Eights-Siple area has the world's highest whistler rates, often exceeding one whistler per sec during austral winter. The discussion of VLF phenomena is divided into two parts: 1) the dynamics of the thermal plasma (energies of less than approx 10 eV) in the magnetosphere, deduced from the dispersion characteristics of whistlers; and 2) the effects of energetic electrons (energies of more than approx 100 eV) that give the magnetosphere its amplifier-oscillator properties. Energetic electrons are not usually present in sufficient numbers to affect the propagation characteristics of the waves but have sufficient energy fluxes to cause strong wave growth.

K-20295

Helliwell, R.A., Katsufrakis, J.P., **Controlled wave-particle interaction experiments,** *American Geophysical Union. Antarctic research series,* 1978 Vol.29, Upper atmosphere research in Antarctica, edited by L.F. Lanzerotti and C.G. Park, p.100-129, 34 refs.

DLC QC807.6.A55U66

The use of controlled VLF waves to conduct wave-particle interaction experiments on the magnetosphere is examined. The test signals are generated by a transmitter located at Siple Station. Early experiments, current theoretical work, experimental techniques, experimental results, and future directions of research are described. The experimental results include data on the following phenomena: wave growth and emissions, power line radiation, growth suppression, quiet bands, wave-wave interactions, and satellite observations of Siple signals. It is noted that the interpretations given of the experiments are preliminary as the classical wave-particle interaction theory is limited in its ability to account for the new observations.

K-20296

Lanzerotti, L.J., **Studies of geomagnetic pulsations,** *American Geophysical Union. Antarctic research series,* 1978 Vol.29, Upper atmosphere research in Antarctica, edited by L.F. Lanzerotti and C.G. Park, p.130-156, 56 refs.

DLC QC807.6.A55U66

This treatment of geomagnetic pulsations includes an introduction, a description of the instrumentation employed, statistical results of studies on pulsation distributions, data on conjugate phenomena, hydromagnetic waves and related phenomena, and directions for future research. Recommendations for future programs on geomagnetic pulsation research, all of which require an antarctic base for observations, include the following: 1) further in-depth investigation of the transmission problem in the ionosphere, preferably by using multiple conjugate stations; 2) extension of the conjugate point meridian studies to include stations spaced in longitude as well as increased latitudinal coverage; 3) two or more pairs of conjugate points along a magnetic meridian to establish the wave structure in the magnetosphere better; and 4) further work on conjugate studies and correlated wave measurements to study wave modes and propagation. In addition to these programs, the opportunity to study the dayside cusp and associated wave phenomena at the South Pole and to investigate further magnetosphere-interplanetary field coupling at Vostok should be pursued with vigor.

K-20297

Akasofu, S.-I., **Recent progress in antarctic auroral studies,** *American Geophysical Union. Antarctic research series,* 1978 Vol.29, Upper atmosphere research in Antarctica, edited by L.F. Lanzerotti and C.G. Park, p.157-199, 43 refs.

DLC QC807.6.A55U66

Following a brief introduction, the concept of the auroral oval is discussed, and the location of the oval over the antarctic continent is given at different universal times. In section 3 the shadow height (or solar depression angle) over the arctic and antarctic regions is compared for the Dec. and June solstices. This comparison makes it clear that South Pole is the only station which can observe dayside aurora without effects of solar radiation; further, the South Pole is a unique location to study direct interaction processes between solar wind plasma and the terrestrial upper atmosphere without contamination by solar radiation effects. Numerous photographs, taken simultaneously by Defence Meteorological Satellite Program (DMSP) satellites and an all-sky camera at South Pole station are shown and discussed. The conjugacy of arctic and antarctic auroras and the proton aurora are briefly reviewed in sections 4 and 5, respectively. Future auroral studies in the antarctic regions are suggested in section 6.

K-20298

Dudeney, J.R., Piggott, W.R., **Antarctic ionospheric research,** *American Geophysical Union. Antarctic research series,* 1978 Vol.29, Upper atmosphere research in Antarctica, edited by L.F. Lanzerotti and C.G. Park, p.200-235, Refs. p. 232-235.

DLC QC807.6.A55U66

The scope of this paper includes the introduction of some theoretical concepts of the ionosphere; a discussion of the relevance of ionospheric research in Antarctica to general aeronomic problems, with emphasis on the special advantages offered by the region; a discussion of the possibilities for monitoring magnetospheric-ionospheric processes by using ionosondes, with descriptions and illustrations of key phenomena; a reinvestigation and interpretation of average F2 layer variations over the south polar cap; and finally, some suggestions for future ionospheric research in Antarctica.

K-20299

Gillmor, C.S., **Early history of upper atmospheric physics research in Antarctica,** *American Geophysical Union. Antarctic research series,* 1978 Vol.29, Upper atmosphere research in Antarctica, edited by L.F. Lanzerotti and C.G. Park, p.236-262, Refs. p.260-262.

DLC QC807.6.A55U66

This paper discusses the historical circumstances of the first application of several specialties and new techniques of upper atmospheric physics research to Antarctica: radio propagation studies, Kenelly-Heaviside echo sounds, VLF phenomena and whistlers, cosmic ray studies, and certain details concerning early attempts at photographic recording of aurorae. Less attention is given here to those early studies which became generally known through the scientific literature. The work described is comprised of previously unpublished or virtually unknown findings which should interest persons currently studying problems in antarctic upper atmospheric physics.

K-20350

Laurent, G., **Mission to the Japanese antarctic station, Showa** [Mission à la base antarctique japonaise de Syowa], *France. Ministère d'Etat chargé des départements et territoires d'outre-mer. Terres australes et antarctiques françaises,* Aug.-Sep. 1976 No.68-69, p.41-54, In French.

This article reports on a joint French-Japanese study of VLF emissions and auroras carried out at Showa from January 7 to Febru-

ary 13, 1976. Schematic drawings of the electronic installations, descriptions of equipment, and a brief summary of preliminary results are included.

K-20378

Piggott, W.R., **High latitude supplement to the *URSI Handbook on Ionogram Interpretation and Reduction*,** Boulder, Colorado, World Data Center for Solar-Terrestrial Physics, Oct. 1975, 279p. PB-247 916-50/ST.

This supplement is intended to provide samples of actual ionograms to illustrate the line drawings given in the *Handbook*, to produce reference ionograms and ionogram sequences so as to aid future discussions and to clarify particular difficulties. The collection is aimed at scientists who need to use ionospheric data but are not expert in the field of ionogram interpretation. Many of the phenomena shown occur at most latitudes. The input has been presented in two incompatible ways, with organization or network collections but otherwise in order of descending geomagnetic latitude, first for the Northern Hemisphere and then for the Southern. (Auth.)

K-20390

Thomas, I.L., Bond, F.R., **Spherical harmonic analysis of the austral auroral oval,** *Planetary and space science,* July 1978 26(7), p.691-695, 11 refs.

Computerized spherical harmonic analysis is applied to the morphology of the southern auroral oval. Records from 23 All Sky Camera stations together with visual observation reports for the period 1957-1959 constitute the raw data set. The mode of the derived auroral occurrence distribution function is regarded as the maximum probability contour and yields a set of auroral ovals. These 10 contours, one for each magnetic activity level, are expressed in the invariant magnetic co-ordinates of Bond (1968). (Auth.)

K-20408

Bowman, G.G., **Relationship between polar magnetic substorms, ionospheric height rises and the occurrence of spread-F,** *Journal of atmospheric and terrestrial physics,* June 1978 40(6), p.713-722, 28 refs.

Statistical analyses performed for ionosonde stations (at mid- and low-latitudes) in a longitude zone near the 75 W (geographic) meridian, suggest that increases in the ionospheric parameter h'F are related to polar-magnetic-substorm onset times as recorded by a magnetogram station (Halley Bay) in the same longitude zone as the ionosonde stations. The height increases are recorded for several hours after the substorm onset times, and seem to trigger the onset of ionospheric spread-F. (Auth. mod.)

K-20430

Zinchenko, G.N., Nisbet, J.S., **Coupling of mid-latitude spread-F between conjugate stations,** *Journal of atmospheric and terrestrial physics,* Apr. 1977 39(4), p.469-474, 11 refs.

It appears that spread-F is associated with electric field perturbations, and that above a certain scale length, transverse electric fields are coupled between hemispheres. It is shown that when conditions are different in the two hemispheres, marked differences occur in the spread-F incidence. It is concluded that dominant control of midlatitude spread-F does not involve interhemispheric coupling. This implies that dominant control of mid-latitude spread-F is played by irregularities of scales shorter than 2 km, and consequently, that coupling between the E- and F-regions is also unlikely to be of dominant importance. The marked coincidence of spread-F in the two hemispheres makes it appear that, when conditions at both ends of the field line are suitable for the initiation of spread-F, coupling takes place. (Auth. mod.)

K-20500

Saflekos, N.A., Potemra, T.A., Iijima, T., **Small-scale transverse magnetic disturbances in the polar regions observed by Triad,** *Journal of geophysical research,* Apr. 1, 1978 83(A4), p.1493-1502, 61 refs.

Small-scale transverse magnetic field disturbances are often observed with the magnetometer experiment on board the Triad satellite at latitudes poleward of the large-scale field-aligned current regions associated with auroral phenomena. In contrast with the magnetic variations associated with the large-scale auroral field-aligned currents, the polar cap magnetic variations are smaller in amplitude and show variations over smaller latitude ranges. The small-scale variations are transverse to the main geomagnetic field and therefore explainable by field-aligned currents, but these currents are not necessarily sheets aligned in the geomagnetic east-west direction as the auroral field-aligned currents often are. The small-scale disturbances occur most frequently in the morning sector. The amplitudes of the polar magnetic variations show little correlation with Kp, but they are observed more frequently at lower invariant latitudes during disturbed geomagnetic conditions. The frequency of occurrence of the small-scale magnetic variations is correlated with the azimuthal direction of the interplanetary magnetic field (IMF). Data recorded at McMurdo are illustrated and discussed.

K-20501

Carpenter, D.L., **New whistler evidence of a dynamo origin of electric fields in the quiet plasmasphere,** *Journal of geophysical research,* Apr. 1, 1978 83(A4), p.1558-1564, 18 refs.

The present note provides new information pertinent to the origin of quiet day drifts in the plasmasphere and to the noontime plasmaspheric bulge that appears to develop as a result of the drifts. A whistler path drift analysis of four successive 24-hour periods of magnetic quiet was performed. The results confirm earlier findings and extend them by showing new evidence of a decrease with increasing equatorial distance in the east-west magnetospheric electric field at $L=4$. The results also provide additional evidence of a secondary maximum in plasmapause radius near noon, apparently the phenomenon reported by Gringauz and Bezrukikh (1976). The whistler data were recorded at Siple Station.

K-20502

Leavitt, M.K., Carpenter, D.L., Seely, N.T., Padden, R.R., Doolittle, J.H., **Initial results from a tracking receiver direction finder for whistler mode signals,** *Journal of geophysical research,* Apr. 1, 1978 83(A4), p.1601-1610, 13 refs.

A new apparatus combining a tracking receiver and a direction-finding signal processor for observation of VLF whistler mode signals is described. The system is expected to achieve greater bearing accuracy than can be obtained from a conventional goniometer and is usable on a wider variety of signals than can be processed by most other techniques. Convenience in data output has been emphasized. In July-Aug. 1975 the new tracker/direction finder (TR/DF) was successfully field tested at Roberval, Canada. Observations were made on natural whistlers and emissions and on signals from the Siple, Antarctica, VLF transmitter. As a test of accuracy on arrival bearing of whistler mode signals, the TR/DF output was compared with results from a goniometer operating from the same set of crossed loop and vertical antennas. The two systems agreed within approximately 10 degrees on several-minute averages of bearings of both Siple transmitter pulses and natural signals. Effects of multipath propagation and polarization error have been identified. (Auth. mod.)

K-20503
Carpenter, D.L., **Whistlers and VLF noises propagating just outside the plasmapause,** *Journal of geophysical research,* Jan. 1, 1978 83(A1), p.45-57, 34 refs.

Ground-based recordings of broad-band whistler mode signals propagating along the outer 'surface' of the plasmasphere, just beyond the region of steep plasmapause density gradients, exhibit a number of features that have not been observed in other field line regions. The features include extension of signal frequencies into the range 0.5-0.8 fHeg, where fHeg is the equatorial electron gyrofrequency of the path, and echoing or repeated propagation over the path at frequencies above 0.5 fHeg. The effects are frequently exhibited by the 'knee trace', the whistler component propagating just beyond the plasmapause in the low-density or plasma trough region. The unusual features include VLF noise bands and bursts that are frequently triggered or 'activated' by knee whistler traces or echoes of knee traces. The noise bands and bursts tend to occur within the frequency range 0.4-0.8 fHeg and near the frequency of an amplitude peak in knee whistler trace activity. The wave activity is documented in VLF data from Eights, Antarctica (L=4), for 1963 and 1965 and from Siple, Antarctica (L=4.2), for 1973 through 1975.

K-20507
Helliwell, R.A., Katsufrakis, J.P., Bell, T.F., Raghuram, R., **VLF line radiation in the Earth's magnetosphere and its association with power system radiation,** *Journal of geophysical research,* Nov. 1, 1975 80(31), p.4249-4258, 15 refs.

In a recent experiment, discrete VLF emissions from the magnetosphere were triggered by a transmitter at Siple Station in Antarctica. Spectrograms of these signals as received at the conjugate point, Roberval, Quebec, showed changes in slope, entrainments, and cutoffs at frequencies (several kilohertz) close to the harmonic induction lines from the local 60-Hz power system. This observation led to the suggestion that harmonic radiation from the power system enters the magnetosphere and interacts with the triggered emissions. New evidence supporting this suggestion has been found in spectrograms of simultaneous recordings made at Roberval and at Siple Station in Antarctica. It is shown that line radiation, near harmonics of 60 Hz, travels along the earth's magnetic field in the whistler mode and is received in the conjugate hemisphere at Siple Station. Echoing of the line radiation between Siple and Roberval is often observed. The magnetospheric lines are usually shifted in frequency by 20-30 Hz with respect to the adjacent induction line, but their spacings are near 120 Hz. They may trigger and cut off emissions as do signals from VLF transmitters. (Auth. mod.)

K-20509
Weber, E.J., Mende, S.B., Eather, R.H., **Optical diagnostics of the August 1972 PCA event,** *Journal of geophysical research,* Nov. 1, 1976 81(31), p.5479-5487, 24 refs.

Auroral photometric measurements were carried out at South Pole, Antarctica throughout the austral winter of 1972. Observed auroral emissions included 4278A N2+. 4861A H beta, 5577A O I, and 6300A O I. A comprehensive study of auroral emissions and riometer absorption associated with the solar flare activity of August 1972 has been carried out. Energetic solar protons (greater-than 1 MeV) measured by satellite detectors over the polar caps were found to be reasonable for the measured 30-MHz absorption in both the northern and the southern hemispheres, except for two substorm-related events. These protons account for only a fraction of the measured 4278A N2+ with the remainder of the emissions excited by protons and electrons of lower energies. Simultaneous photometric measurements and riometer observations allow separation of precipitating particle species and characteristic energy, which in turn allows separation of substorm effects from energetic solar proton effects. (Auth.)

K-20510
Park, C.G., **VLF wave activity during a magnetic storm: a case study of the role of power line radiation,** *Journal of geophysical research,* Aug. 1, 1977 82(22), p.3251-3260, 12 refs.

Ground-based data on magnetospheric wave activity in the American longitude sector are studied for a 13-day period that includes a major magnetic storm and some isolated substorm activity. The wave intensity in the 0.5- to 10- kHz range shows clear association with geomagnetic activity. A detailed examination of VLF spectra shows that the strongest waves emerging from the middle magnetosphere during the storm recovery period and during isolated substorm activity are often emissions stimulated by radiation from the electrical power distribution system. Several different types of power line radiation effects are illustrated by using broadband spectral data from stations in Antarctica and North America. It appears that man-made VLF noise has a strong influence on the energetic particle population in the magnetosphere. (Auth.)

K-20516
Japanese Antarctic Research Expedition, **Records of all-sky camera photographs Syowa Station, Antarctica in 1976,** *JARE data reports,* July 1978 No.45, 8p.

This report gives information on all-sky photograph data obtained in 1976. Observations were carried out during clear nights between March 1 and October 10. In general, six photographs were taken every minute. The data and hour of the observations are given in tables.

K-20524
Khodzha-Akhmedov, Ch.L., **Polar cap absorption in Antarctica in 1967,** Charlottesville, Va., Army Foreign Science and Technology Center, June 1973, 11p., ADA-005 175, For Russian original, see 5K-9680.

Polar cap absorption was investigated from January to May of 1967. It was found that PCA follows a daily course, generating the most radio noise at midday when the sun's altitude is highest. During absorptive periods, radio communications were disturbed and, in some cases, completely absent. However, data contradicting this observation are reported. In spite of this, the absorptive region was formed below the region of scattering. (Auth.)

K-20528
Reilly, W.I., Burrows, A.L., Syms, M.C., **Geomagnetic field in New Zealand in 1975,** *New Zealand journal of geology and geophysics,* 1978 21(1), p.127-133, 4 refs.

An analytic expression for the geomagnetic field in New Zealand in 1975 has been derived, as a revision of the field at epoch 1970.5, by including more recent observations up to 1975 in the analysis. Data on Macquarie Island are included.

K-20530
Shirke, J.S., Degaonkar, S.S., **Origin of annual and subannual periodicities in F region ionization,** *Journal of geophysical research,* Mar. 1, 1978 83(A3), p.983-988, 12 refs.

The monthly median values of maximum electron density NmF2 in the F region are harmonically analyzed for a number of high-latitude and auroral zone stations for each hour of the day during 1958 and 1964. The list of stations for which analysis is made includes Deception, Port Lockroy, Campbell I., Halley Bay, Ellsworth, and Wilkes. In the high-activity year 1958, the annual maximum appears in December around 70N for a few hours around noon. The December excess diminishes gradually toward the south, though the duration

over which it lasts increases toward the dip equator. By 70S a slight June enhancement is seen around noon. During the remaining hours of the day a December phase is seen around 70S, having a large amplitude which decreases toward the north, reaching a slight June excess by 70N. A 6-monthly component with equinoctial maximums exists at all stations for all hours of the day, the amplitude being somewhat larger in the south than it is in the north. In the low-sunspot year 1964, the December phase of the annual component is present in the north with low amplitude for a few hours around noon. The same phase prevails in the south. This is followed in local time by a large-amplitude June phase in the north and a December phase in the south. The 6-monthly component is predominant during daytime only and has equinoctial maximums. The current theories are shown to be inadequate to explain these results. (Auth. mod.)

K-20531

Lanzerotti, L.J., Maclennan, C.G., Evans, C., **Association of ULF magnetic variations and changes in ionospheric conductivity during substorms,** *Journal of geophysical research,* June 1, 1978 83(A6), p.2525-2532, 42 refs.

Quantitative determinations are made of the correlation coefficients and their standard deviations between variations in the cosmic noise absorption by the ionosphere and variations in magnetic field in the period range approx 29-100 s, as measured at Siple, Antarctica. The magnitudes of the magnetic field fluctuations together with the absorption variations are consistent with changes in the ionospheric conductivity at approx 100-km produced by particle precipitation. The particle precipitation may at times be evidence of the modulation of particle pitch angle distributions by highly localized hydromagnetic waves in the earth's magnetosphere. (Auth. mod.)

K-20534

Park, C.G., Carpenter, D.L., Wiggin, D.B., **Electron density in the plasmasphere: whistler data on solar cycle, annual, and diurnal variations,** *Journal of geophysical research,* July 1, 1978 83(A7), p.3137-3144, 31 refs.

Whistler data are used to present a statistical view of equatorial plasmaspheric electron density neq and associated tube electron content NT. The data were acquired between 1959 and 1973 at Byrd (L=7), Eights (L=4), and (Siple (L=4), Antarctica, which are within 1 hour of the same geomagnetic meridian, and from Stanford, California (L=2). The plasmaspheric neq profile beyond L=3 is dominated by variations associated with magnetic disturbances and subsequent recovery. Large numbers of whistler traces (as many as 3000 in some cases) were scaled for each of several months. These data sets form the basis for approximations to neg profiles to form log10 (neg) - aL + b. These profiles are offered for reference use in estimating plasmasphere density levels. The previously reported annual and solar cycle variations are further documented by new evidence that these effects diminish with increasing L beyond L=3. (Auth. mod.)

K-20535

Inan, U.S., Bell, T.F., Helliwell, R.A., **Nonlinear pitch angle scattering of energetic electrons by coherent VLF waves in the magnetosphere,** *Journal of geophysical research,* July 1, 1978 83(A7), p.3235-3253, 60 refs.

During the past three years, VLF wave injection experiments to study coherent VLF wave-particle interactions in the magnetosphere have been carried out with the Stanford University variable frequency VLF transmitter at Siple Station in the Antarctic. One goal of these experiments is to understand the mechanism of wave growth. Another is to learn how to control the energetic particles by the injected waves. The latter problem is the subject of this paper. A computer simulation approach is used to study the nonlinear cyclotron resonant interaction of energetic electrons and coherent VLF waves, with special emphasis on the pitch angle scattering of the particles. Complete equations of motion in an inhomogeneous magnetosphere are used, and the effects of various parameters are studied. Comparison is made with linear theory, and a quantitative and easy-to-use criterion to determine the applicability of linear theory under any given conditions is presented. The results indicate that coherent VLF waves can have a significant effect on the dynamics and lifetimes of energetic electrons trapped in the magnetosphere on magnetic shells illuminated by the waves.

K-20544

Brown, R.R., **On the poleward expansion of ionospheric absorption regions triggered by sudden commencements of geomagnetic storms,** *Journal of geophysical research,* Mar. 1, 1978 83(A3), p.1169-1171, 8 refs.

A review of riometer data from the south pole (74.2 deg invariant latitude) for a 7-year period (1967-1973) indicates the occurrence of sc-triggered poleward expansions of auroral absorption regions. For 15 such events the average AE index in the hour before the sc's was twice as large as that for 30 sc's that did not trigger substorm events at auroral latitudes. This result indicates that the triggering of substorms involves the enhancement of processes already in progress by the compression of the magnetosphere. (Auth.)

K-20555

Bird, I.G., Humphreys, A.E., **Unmanned geophysical observatory for antarctic operation,** *Institution of Radio and Electronics Engineers, Australia. Proceedings,* Jan. 1972 33(1), p.7-22, 66 refs.

The remoteness and environmental severity of inland Antarctica presents an unusual challenge to the engineering of scientific instrumentation. This paper discusses the design and construction of an unmanned geophysical observatory for research into physics of the upper atmosphere (aurora, ionosphere, geomagnetism) and micrometeorology. The equipment is required to operate unattended for up to one year in remote regions of Antarctica. (Auth.)

K-20623

Maclennan, C.G., **On the relationship of 3mHz (Pc5) electric, magnetic, and particle variations,** *Geophysical research letters,* May 1978 5(5), p.403-406, 24 refs.

The magnetic field fluctuations are produced by magnetohydrodynamic waves of approximately 5 min period in the earth's magnetosphere. The magnetic field data were acquired at the Bell Labs. stations in New Hampshire and Quebec as well as in the conjugate area at Siple Station. The magnetic field fluctuations are produced by magnetohydrodynamic waves of approximately 5 min period in the earth's magnetosphere. The electric, magnetic, and particle variations are observed to be in close phase relationship when the measurements are made near the resonance region of the magnetospheric waves. When the resonance region is not close to the location of the electric field observations no clear wave-associated electric field or particle variations are observed. The observed wave frequency is approx. 3 times lower than the fundamental Alfvén resonance frequency. This may arise from a Doppler shift of the resonant frequency by a diamagnetic plasma drift. The height-integrated ionospheric Pederson conductivity deduced from the simultaneous electric and magnetic field variations corresponds to approximately 30 mho. (Auth. mod.)

K-20627

Agrawal, S.P., Lanzerotti, L.J., **Solar-polar coronal holes and the north-south cosmic ray gradient,** *Geophysical research letters,* July 1978 5(7), p.589-591, 16 refs.

Using Skylab measures of solar polar coronal hole areas, it is shown that during non-disturbed periods the north-south gradient of

galactic cosmic rays as measured at 1 AU depends upon the difference in areas of the polar coronal holes. Higher cosmic ray fluxes are observed from the polar direction with the smaller coronal hole area. Galactic cosmic ray data measured by super neutron monitors on the ground at Thule and McMurdo Station are used in the analysis. (Auth. mod.)

K-20628
Duggal, S.P., Pomerantz, M.A., **Symmetrical equator-pole anisotropy during an unusual cosmic ray storm,** *Geophysical research letters,* Aug. 1978 8(5), p.625-627, 18 refs.

The third remarkable cosmic ray storm in more than two decades of continuous observations commenced on Feb. 14, 1978. In contrast with its two predecessors (July 11, 1959 and Aug. 4, 1972) the magnitude of the decrease at equatorial-viewing stations significantly exceeds that at stations in both polar regions. Thus, in contrast with the usual situation characterized by some degree of north-south asymmetry, this unique event manifested an equator-pole bidirectional anisotropy indicating a symmetrical cosmic ray density gradient rising from the equatorial plane. The nucleonic intensity data suggest that the solar plasma regime responsible for the modulation on this occasion engulfed the earth in a symmetrical configuration with respect to the equator. (Auth. mod.)

K-20629
Sylvain, M., Berthelier, J.J., Lavergnat, J., Vassal, J., **F-lacuna events in Terre-Adelie and their relationship with the state of the ionosphere,** *Planetary and space science,* Aug. 1978 26(8), p.785-799, 26 refs.

F-lacuna event is a typical phenomenon of the high latitude ionosphere occurring during summer days. It consists in a disappearance of echoes from the F-layer on ionograms and a simultaneous extra absorption of about 0.1 to 0.4 dB on 30 MGz cosmic waves. This paper, based on data from the Dumont d'Urville station, describes the properties of this phenomenon: correlation with magnetic activity, convection electric field, interplanetary magnetic field, absorption in the lower ionosphere and electron density in the F-layer. A tentative model of interpretation in terms of large scale electron density irregularities in the F-layer is suggested. (Auth.)

K-20630
Lanzerotti, L.J., Maclennan, C.G., **Oscillations of the sun and the geomagnetic field,** *Nature,* Sep. 14, 1978 275(5676), p.113-114, 9 refs.

It has been suggested by Toth (1977), using geomagnetic field data recorded at Tihany, Hungary, that the reported long-period oscillations of the solar atmosphere may be observed as oscillations of the geomagnetic field. Spectral analysis of geomagnetic field data obtained from fluxgate magnetometer stations in New Hampshire, Quebec, and the conjugate area at Siple Station on the same days as those published by Toth show no evidence of solar oscillations being reflected in the Earth's magnetic field on a global scale. The reported geomagnetic variations with a period of approx 2 h 40 min must be local, related to geophysical sources in the vicinity of the observing station.

K-20689
Hargreaves, J.K., Berry, M.G., **Eastward movement of the structure of auroral radio absorption events in the morning sector,** *Annales de géophysique,* 1976 32(4), p.401-406, 19 refs.

The motion of auroral radio absorption events in the morning sector has been studied, using riometer stations separated by about 250 km. The velocity of individual absorption peaks tends to be lower towards the end of the event, which is consistent with a mechanism whereby the auroral particles are injected near midnight and drift eastward in the closed magnetic field. However, it is difficult to reconcile the actual velocities with those measured on geostationary satellites in the equatorial plane. It appears that the structure in the electron precipitation moves considerably slower than magnetospheric plasma clouds of similar energy. (Auth.)

K-20691
Leont'ev, S.V., **Effect of the Y component of the interplanetary magnetic field on the position of the polar cusps,** *Geomagnetism and aeronomy,* Oct. 1975 15(3), p.458-460, 9 refs. Translated from Geomagnetizm i aeronomiia, 15(3):1975.

Satellite measurements of electric fields and transverse magnetic disturbances show that intense field-aligned currents flow in the region of polar cusps both in disturbed and quiet periods. It is demonstrated that the deformation of polar cusps by currents associated with the Y component of the interplanetary field is fairly substantial and methods are discussed of identifying such deformation. The Y component gives rise to a three-dimensional current system with field-aligned currents at the boundaries of polar cusps that produce a substantial deflection of the neutral line from the plain of the noon meridian.

K-20698
Kambu, F., Maral, G., Zhulin, I.A., Kopylov, IU.M, **Investigations of auroral x-radiation in the Kerguelen-Arkhangel'skaya oblast magnetically conjugate regions,** *Cosmic research,* July-Aug. 1970 8(4), p.547-553, Translated from Kosmicheskie issledovaniia, Vol. 8, No.4, p.595-602, July-Aug. 1970. 7 refs.

This paper gives the results of a study of auroral x-radiation in the magnetically conjugate regions on Kerguelen Island (Indian Ocean) and in Arkhangel'skaya Oblast (USSR) obtained in Mar.-Apr. 1968. The measurements were made using drifting high-altitude balloons carrying spectrometers consisting of scintillation detectors with collimators in combination with 128-channel pulse analyzers (energy region 15-150 keV). (Auth.)

K-20766
Tuliakov, V.V., Tulinov, V.F., **Initial results of rocket studies of charged particle streams in Antarctica** [Pervye rezul'taty raketnykh izmereniĭ potokov zariazhennykh chastits v Antarktide], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1978 Vol.67, p.58-63, In Russian. 6 refs.

The results of 54 M-100 upper atmosphre rocket probes done at Molodezhnaya from Feb. 1973 to Feb. 1974 to measure corpuscular radiation intensity at 85 km are discussed. It was determined that soft corpuscular radiation intensity in the auroral zone fluctuates widely. In winter it fluctuates in relation to the Kp geomagnetic field indices. Ionospheric absorption increases in direct proportion to corpuscular radiation intensity.

K-20767
Khodzha-Akhmedov, Ch.L., Kashurko, M.S., **Preliminary results of oblique-incidence sounding of the ionosphere on a Moscow-Antarctica path** [Predvaritel'nye rezul'taty naklonnogo zondirovaniia ionosfery na trasse Moskva-Antarktida], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1978 Vol.67, p.64-72, In Russian. 4 refs.

Oblique-incidence soundings were carried out along the meridional path from Moscow to Molodezhnaya Station. There is a 24-hour pattern of recorded maximum and minimum frequencies on the ionograms. They differ significantly from predicted frequencies.

K-20768
Kashurko, M.S., Khodzha-Akhmedov, Ch.L., **Preliminary results of studies of multi-trajectory signals on the Moscow-Molodezhnaya path** [Predvaritel'nye rezul'taty issledovaniia mnogoluchevosti signala na trasse Moskva-Molodezhnaia], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1978 Vol.67, p.73-76, In Russian. 4 refs.

Data on multi-trajectory distribution of radiowaves on the Moscow-Molodezhnaya path are analyzed. The authors show that maximum lags are observed primarily between 0.7 and 1.0 maximum observed frequency and last between 1.7 and 1.2 microseconds, all of which is typical for ionograms in 2-4-mode distribution. These results are compared with those of other workers.

K-20769
Khodzha-Akhmedov, Ch.L., Kashurko, M.S., **Auroral absorption at Molodezhnaya Station in 1973** [Avroral'noe pogloshchenie v AMTs Molodezhnaia v 1973 g.], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1978 Vol.67, p.77-80, In Russian. 8 refs.

Variations of auroral absorption are examined on the basis of riometer observations at 32 MHz. It is apparent that the diurnal frequency pattern of absorption shows pre-noon and post-midnight maxima that vary seasonally. Absorption minimum occurs in the evening.

K-20770
Khodzha-Akhmedov, Ch.L., **Feasibility of using a quartz clock for determining phase drift of very low-frequency radiowaves** [O vozmozhnosti ispol'zovaniia kvartsevykh chasov dlia izmereniia dreĭfa fazy sverkhdlinnykh radiovoln], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1978 Vol.67, p.81-87, In Russian. 4 refs.

Errors in the readings of the quartz clocks used on an oblique-incidence sounding system are examined. The feasibility of using them to determine phase drift of very-low-frequency radiowaves with automatic quartz generator frequency correction is discussed.

K-20771
Kashurko, M.S., Kuperov, L.P., Khodzha-Akhmedov, Ch.L., **Results of field intensity measurements of short-wave exact time radio stations at Molodezhnaya** [Rezul'taty izmereniĭ napriazhennosti polia KV radiostantsiĭ tochnogo vremeni na stantsii Molodezhnoĭ], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1978 Vol.67, p.88-92, In Russian. 3 refs.

Results of field intensity measurements at Molodezhnaya Station and at radio stations in Moscow, Novosibirsk and Irkutsk using a program of exact-time signal transmission are presented. It is demonstrated that short-wave distribution en route to Antarctica depends on illumination and absorption in the polar and equatorial ionosphere.

K-20773
Golikov, IU.V., Kleĭmenova, N.G., **VLF signal observations at Molodezhnaya Station** [Nabliudenie ONCh-signalov v AMTs Molodezhnaia], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1978 Vol.67, p.97-100, In Russian. 9 refs.

Results of VLF signal observations for Sep. through Nov. 1973 in the 300-10,000 Hz range are reported. As a rule, daytime, nighttime and morning maxima occur in background noise. The morning maximum is not so stable in time and occurs during magnetic storms, reaching its highest level during storms of average intensity. The nighttime maximum generally precedes magnetic storms at Molodezhnaya. Noise spectra during day and night maxima are identical, with maximum peaks between 8-10 kHz. Possible mechanisms for signal generation which account for the three maxima are offered.

K-20840
Corcuff, P., Corcuff, Y., Tarcsai, G., **Methods of whistler analysis. Pt.2. Application to whistlers observed on the ground** [Méthodes d'analyse des sifflements électroniques: Pt.2. Application à des sifflements observés au sol], *Annales de géophysique,* Oct.-Dec. 1977 33(4), p.455-459, In French with English summary. 10 refs.

Whistlers observed on the ground, in several stations at different latitudes and longitudes, are used to compare various methods of determining whistler parameters in the absence of causative sferic and nose frequency. The Corcuff (1977) method (or CH method) is applied to a large number of whistlers recorded at Kerguelen during a period of several hours. The results show that this method is sufficiently accurate to detect slow variations of the characteristic whistler parameters, and thence the motions of the cold plasma in the magnetosphere. (Auth.)

K-20880
Cazeneuve, H.A., Guerrero, G.E., **Harmonic analysis of auroral pulsations,** *Annales de géophysique,* Apr.-June 1978 34(2), p.97-103, In English with French summary. 15 refs.

Results of observations of auroral activity at the Belgrano Station are given. Auroral pulsations exhibit cyclically repeated phases of growth, saturation and decay, characterized by well-defined forms of pulses. This ordered structure indicates that wave-like processes modulate the auroral fluxes. The frequency band of the auroral pulsations as given by the harmonic analysis, overlaps with that of the IMF, and its spectral dependence is the same for both, the IMF and the auroral pulsations. (Auth. mod.)

K-20947
Nagata, T., ed, **Proceedings of the Second Symposium on Rocket Experiments in Antarctica,** *Tokyo. National Institute of Polar Research. Memoirs,* Oct. 1978 Special issue No.9, 91p., Refs. passim.

This volume contains 9 papers dealing with rocket exploration of the southern polar ionosphere and austral auroras, a program being conducted as part of the International Magnetospheric Study (IMS). The papers report significant results obtained from experiments with S-210 and S-310 type sounding rockets. The results include data on profiles of electron density and temperature, precipitating electrons, VLF emissions, and attitudes of launched rockets. For abstracts of papers see K-20948 through K-20956.

K-20948
Ogawa, T., Mori, H., Miyazaki, S., **Rocket measurements of daytime electron density and temperature profiles in the polar ionosphere,** *Tokyo. National Institute of Polar Research. Mēmoirs,* Oct. 1978 Special issue No.9, p.1-10, 10 refs.

Two sounding rockets, S-210JA-22 and S-310JA-1, were successfully launched into the quiet daytime ionosphere from Showa Station in the summer of 1976 for measuring electron density and temperature. The S-210JA-22 experiment shows that the E-region electron density (Ne) was nearly 20,000/cu cm and that the electron temperature (Te) increased with altitude, being 600 K at altitude of 100 km to 900 K at 120 km. Profiles between 90 and 215 km measured by S-310JA-1 reveal that Ne changed slowly from 100,000 at 100 km to 70,000/cu cm at 215 km and that Te had a minimum of 500 K at 110 km, which was followed by the gradual increase attaining to 1900 K

at 215 km. Comparing the present results with the daytime electron density profiles obtained at Showa Station during 1970-1973 and with those at mid-latitude, it is pointed out that the main ionization process occurring in the polar D-region is a high energy particle precipitation from the magnetosphere, even under quiet daytime ionospheric conditions. (Auth.)

K-20949

Kodama, M., Imai, T., Takeuchi, H., Wada, M., **Rocket measurements of auroral-zone energetic electrons at Syowa Station, Antarctica. I. Characteristics of electrons under no geomagnetic disturbance,** *Tokyo. National Institute of Polar Research. Memoirs,* Oct. 1978 Special issue No.9, p.11-23, 9 refs.

A sounding rocket measurement was made, using a plastic scintillation counter and two proportional counters, of the high energy electrons greater than 40 keV at Showa Station (L=6.1), in order to search fundamental properties of the energetic electrons under the geomagnetic quiet condition unaccompanied with auroral phenomena. Energy spectra and pitch angle distributions of the electrons were determined as functions of altitude, on the basis of spin-modulated data obtained in the altitude range 70 km-120 km. Peak fluxes were found of the order of 1,000/sq cm-ster-sec-keV. The pitch angle distribution over the angle range of 0-135 deg peaked at a pitch angle somewhat smaller than 90 deg, and total integrated fluxes of electrons having pitch angles greater than 90 deg. Such asymmetry of distribution was established for different energies and altitudes. The exponent of the power law fitting the energy spectrum decreased steadily from 5.7 to 4.0 with increasing pitch angle from 10 deg to 90 deg. Fractional contribution of upward and downward electrons is discussed. (Auth.)

K-20950

Kubo, H., Itoh, T., Murata, S., Kokubun, S., Hirasawa, T., **Precipitating electrons observed on board the Japanese antarctic sounding rockets S-310JA-1 and S-310JA-2,** *Tokyo. National Institute of Polar Research. Memoirs,* Oct. 1978 Special issue No.9, p.24-33, 6 refs.

Cylindrical electrostatic analyzers on board the Japanese antarctic sounding rockets S-320JA-1 and S-310JA-2 launched on Feb. 13, 1976, and on Feb. 10, 1977, respectively, at Showa Station, obtained the energy spectra of energetic electrons in the antarctic polar ionosphere. At the time of the former flight, the geomagnetic activity was low, and the electron flux of about 1,000 electrons/sq cm-sec-ster-eV was obtained at an energy of 5 keV. The altitude dependence of the flux of 2 keV electrons showed the maximum flux near 150 km altitude of the descending path. This implies that there was a local electron precipitation region. At the time of the latter flight, the geomagnetic activity was high, and the electron flux of about 1,800 electrons/sq cm-sec-ster-eV was obtained at the energy of 4.2 keV. The field aligned electron flux of about 23,000 electrons/sq cm-sec-ster-eV was also observed at the energy of 740 eV. (Auth.)

K-20951

Matsumoto, H., Kaya, N., **Rocket observation of keV electron fluxes at Syowa Station,** *Tokyo. National Institute of Polar Research. Memoirs,* Oct. 1978 Special issue No.9, p.34-42.

Electron fluxes in the energy range of 3-6 keV during a quiet period were measured by a bared type electron spectrometer (ESM) on board the S-310JA-1 rocket at Showa Station. Electron fluxes of approx 100,000/*sq cm-sec-ster-KeV* were observed in the height range between 90 km and 210 km. The ESM instrument proved to be usable in the future experiment. (Auth.)

K-20952

Kaya, N., Matsumoto, H., **Modified electron spectrometer for medium energy,** *Tokyo. National Institute of Polar Research. Memoirs,* Oct. 1978 Special issue No.9, p.43-50, 3 refs.

The Electron Spectrometer for Medium Energy (ESM) aboard the S-310JA-1 rocket worked successfully, but the experimental results showed that several points should be revised. These points have been improved and a modified ESM designed. The modified ESM will be launched with the S-310JA-5 and 6 rockets. (Auth.)

K-20953

Kimura, I., Yamagishi, H., Matsuo, T., Kamada, T., **S-310JA-1 rocket observation of VLF emission spectra at Syowa Station in Antarctica,** *Tokyo. National Institute of Polar Research. Memoirs,* Oct. 1978 Special issue No.9, p.51-68, 7 refs.

VLF chorus observed in geomagnetically quiet conditions by an antarctic rocket S-310JA-1 is discussed in detail in comparison with that observed on the ground (Showa Station). The chorus intensity observed at the rocket altitudes proved the chorus to be propagated in the whistler mode. The upper cutoff frequency of the chorus spectra observed on the ground was always lower than that observed by the rocket. The difference of the upper cutoff frequency is interpreted by the frequency characteristics of both the effect of perfect reflection of the chorus at the bottom of the ionosphere and the collisional damping. Static noise phenomena were also observed by the same rocket, which will be reported in a future paper. (Auth.)

K-20954

Kamada, T., Hirasawa, T., **Observations of wave phenomena in the polar ionosphere by S-210JA-19 rocket,** *Tokyo. National Institute of Polar Research. Memoirs,* Oct. 1978 Special issue No.9, p.69-75.

An S-210JA-19 sounding rocket was launched on July 15, 1973 from Showa Station in order to investigate the auroral hiss in the polar ionosphere. On this day a fairly strong hiss was observed on the ground, but an auroral arc was not observed. The hiss was also observed on the rocket above an altitude of 80 km both in the ascending and the descending phases in the frequency range of 1-8 kHz and at 30 kHz. The field intensity had a maximum around an altitude of 100 km. From these results, it is supposed that in some circumstances auroral hiss is generated at an altitude of about 100 km by auroral particles penetrating into the polar ionosphere. (Auth.)

K-20955

Tanaka, Y., Hayakawa, M., Nishino, M., **Observing plan of wave normal direction of auroral VLF emissions on board a rocket at Syowa Station,** *Tokyo. National Institute of Polar Research. Memoirs,* Oct. 1978 Special issue No.9, p.76-86, 28 refs.

Recent *in situ* observations of auroral VLF emissions have shown that there are two types of emissions; one is generated at high altitudes by incoherent Cerenkov radiation, and the other is generated locally in the auroral ionosphere. Hence the determination of wave normal direction of auroral VLF emissions has been planned at Showa Station, based on the measurement of the polarization ratio on a rocket. The measurement provides information on a 'cone angle' of the wave normal direction about the rocket spin axis. Since the rocket is planned to be launched along the geomagnetic field, such a cone angle is of sufficient use in the study of the generation and propagation mechanisms of auroral VLF emissions. The exact measurement of the electric field intensity is also proposed by adopting a positive feedback amplifier in an antenna-preamplifier network, which will enable us to know the ambient field intensity independently of the variation of plasma parameters. (Auth.)

K-20956

Tohyama, F., Aoyama, I., **Attitudes of the antarctic sounding rocket vehicles,** *Tokyo. National Institute of Polar Research. Memoirs,* Oct. 1978 Special issue No.9, p.87-91.

The attitudes of the 12 sounding rockets which were launched at Showa Station from May 1972 to Aug. 1973 were determined by geomagnetic aspect sensors. The attitudes of the latest launched sounding rockets S-210JA-22 and S-310JA-1 were also determined. The three-dimensional orientation of the S-210JA-22 rocket axis was obtained by the geomagnetic aspect sensors and the solar aspect sensor. The result shows that the precessional motion of the S-210JA-22 vehicle included the geomagnetic field line. The spin frequency of these 14 vehicles was mostly in the range from 1.1 to 1.3 Hz; and their conical (precessional) half angle was mostly from 20 to 60 degrees, with the conical rotational period mostly from 50 to 120 seconds. (Auth.)

K-20958

Kuwashima, M., **Wave characteristics of magnetic Pi2 pulsations in the auroral region—spectral and polarization studies,** *Tokyo. National Institute of Polar Research. Memoirs. Series A: Aeronomy,* Nov, 1978 No.15, 79p., Refs. p.74-79.

Concurrent observations of geomagnetic variations by means of a fluxgate magnetometer and an induction magnetometer were carried out at Showa (L=6.3) and Mizuho Stations (L=7.7) from Aug. 29 to Sep. 29, 1973. Spectral and polarization characteristics of the substorm-associated Pi2 pulsations are investigated in detail, using the data obtained at Showa and Mizuho as well as those at Mawson (L=9.1), Sanae (L=4), Hermanus (L=1.8) in the southern hemisphere and Reykjavik (L=6.3) in the northern hemisphere. The Pi2 pulsations are observed simultaneously with the onset of a substorm expansion phase over the wide area from the auroral region to the low latitudes, with a similar predominant period showing a primary amplitude maximum at the auroral oval and a secondary one near the plasmapause. Pi2 period becomes shorter (longer) when the auroral breakup occurs at lower (higher) latitude. The Pi2 data from the conjugate pair of stations, Showa and Reykjavik, show that the H-components oscillate in phase, whereas the D-components oscillate out of phase. The characteristics of Pi2 polarization change drastically across the center of the auroral electrojet. The sense of polarization reverses from a left-hand polarization on the lower latitude side of the electrojet to a right hand one on the higher latitude side before approx 21h MLT at which Pi2 maximum occurrence is observed, and vice versa after 21h MLT. Considering the observational results, the torsional hydromagnetic oscillation of the field lines localized at the auroral oval is the most plausible model for a main cause of Pi2 pulsations. (Auth. mod.)

K-20979

Rietveld, M.T., Dowden, R.L., Amon, L.E.S., **Micropulsations observed by whistler-mode transmissions,** *Nature,* Nov. 9, 1978 276(5684), p.165-167, 10 refs.

Duct oscillations in the Pc3 range of a 6.6 kHz signal from a transportable VLF transmitter in Alaska, which was received at Dunedin, New Zealand, are reported. Two events were observed about six hours apart. For both these events, comparisons between the Doppler oscillations and ground magnetograms fit very well with current ideas about micropulsations. Data from magnetograms recorded at Campbell I. are illustrated and discussed. The observations show that by phase tracking whistler-mode signals, duct oscillations in the Pc4 (and probably Pc3) range can add new information to existing ground (and satellite) micropulsation data.

K-20996

Brinca, A.L., **Turbulence effects in the cyclotron resonance of monochromatic whistlers,** *Geophysical research letters,* Oct. 1978 5(10), p.839-842, 10 refs.

The nonlinear evolution of the monochromatic whistler cyclotron resonance is responsible for a wide variety of geomagnetospheric phenomena whose interpretation has not taken into account the concomitant existence of whistler turbulence. Consideration of this whistler noise in the evolution of the coherent cyclotron resonance permits placing upper temporal bounds on the validity of the noiseless description of the interaction, and obtaining estimates for the relative intensity of the coherent mode and turbulent fields required for the onset of a typical nonlinear effect to occur. Particularization to the Siple wave injection experiment suggests that the influence of turbulence might be significant for monochromatic whistlers with weak or medium amplitudes. (Auth.)

K-20997

Park, C.G., Chang, D.C.D., **Transmitter simulation of power line radiation effects in the magnetosphere,** *Geophysical research letters,* Oct. 1978 5(10), p.861-864, 14 refs.

Harmonic radiation from electrical power transmission lines is known to trigger strong emissions in the magnetosphere in the range of a few kilohertz. To study this phenomenon on a controlled basis, an experiment was conducted using a very-low-frequency transmitter at Siple (L=4) and a receiver at its conjugate station, Roberval, Quebec, Canada. Many important features of power-line-induced emissions, including their frequency dependence, rapid amplitude variations, and spectral forms, could be simulated by transmitting waveforms containing sidebands with 50 and 100 Hz frequency separations. It is found that power line effects can be simulated by radiating as little as 0.5 W at a given frequency. The results also demonstrate that the magnetosphere can generate sidebands at frequencies up to 25 Hz from the transmitter frequency. This explains why power-line-induced emissions sometimes show frequency components 20-30 Hz from exact multiples of the fundamental power frequency. (Auth.)

K-20998

Ose, M., Nishiyama, N., Sakamoto, J., **Riometer records of 30 MHz cosmic noise at Syowa Station, Antarctica in 1977,** *Japanese Antarctic Research Expendition. JARE data reports,* Nov. 1978 No.46, 82p., 10 refs.

This report includes hourly values and chart records of cosmic noise absorption in the period from Jan. 1 to Dec. 31, 1977. The receiver of the riometer is connected to a vertically directed five-element Yagi antenna, the elements of which are oriented in the east-west direction. The noise power output is recorded by a strip chart recorder with a 1 mm/min chart speed, and noise power levels from a reference noise diode are recorded once a day for calibration. The cosmic noise power level shows a diurnal variation due to changes in path length through the ionosphere. The hourly values of ionospheric absorption given in the tables are the deviation in DBm of cosmic noise intensity from its monthly reference level.

K-21001

Park, C.G., Helliwell, R.A., **Magnetospheric effects of power line radiation,** *Science,* May 19, 1978 200(4343), p.727-730, 12 refs.

Radiation from electrical power lines leaks into the magnetosphere and stimulates strong very-low-frequency wave activity out to many earth radii. Observations in Antarctica show that wave activity induced by power lines tends to occur during the daytime when power consumption is high in the source region in eastern Canada. The wave frequency ranges from 1 to 8 kilohertz. This man-made wave activity may have significant effects on energetic electrons trapped in the earth's radiation belts. (Auth.)

K-21008
Mozhaev, A.M., Chernysheva, S.P., Sheftel, V.M., **Phenomenon of sporadic E-layer conjugation,** *Geomagnetism and aeronomy,* Aug. 1976 16(1), p.46-47, Translated from Geomagnetizm i aeronomiia. 11 refs.

The patterns of the effect of conjugation of sporadic Es layers of the plane type in the subauroral and mid-latitude zones are investigated on the basis of data from two pairs of magnetically conjugate stations, Anchorage and Campbell Island. It is shown that the observed conjugation of intense mid-latitude Es layers, formed by wind shears, can be explained by the electrostatic interaction of magnetically conjugate regions of the ionosphere. (Auth.)

K-21018
Green, C.A., **Polarization characteristics and phase differences of Pi2 pulsations at conjugate stations,** *Journal of atmospheric and terrestrial physics,* Oct./Nov. 1978 40(10/11), p.1223-1228, 3 refs.

Spectral analysis was carried out on Pi2 pulsations occurring simultaneously at the conjugate stations St. Anthony, Newfoundland, and Halley Bay, Antarctica, during the second half of 1976. For the strongest lines in each spectrum, the ellipticities and azimuths of the horizontal polarization ellipses at the two stations were approximately equal and opposite in sign generally consistent with the stations being conjugate, but there was noticeable scatter. When the differences in phase of the components between the stations were examined, they were found to be about 10 deg for the H-component and about 170 deg for the D (consistent with concept of an odd-mode oscillation of the field line) until about middle-late October. After this time, larger variations in the phase differences and decrease in coherence between the stations occurred, and it is suggested that is a result of the presence of an ionosphere E-layer at Halley Bay throughout the night during Southern summer. (Auth.)

K-21021
Creighton, D.F., Yuan, F.F.F., **Detecting geomagnetic pulsations using a solenoid with a ferrite core,** *Journal of physics E: Scientific instruments,* Jan. 1978 11(1), p.43-44, 7 refs.

To monitor geomagnetic pulsations at the southern auroral zone station, Macquarie Island, a sensor consisting of a solenoid wound on a ferrite core was used. The design of the sensor and a suitable preamplifier and their field operations and calibration are described. (Auth.)

K-21058
Ijima, T., Fujii, R., Potemra, T.A., Saflekos, N.A., **Field-aligned currents in the south polar cusp and their relationship to the interplanetary magnetic field,** *Journal of geophysical research,* Dec. 1, 1978 83(A12), p.5595-5603, 30 refs.

The principal characteristics of the cusp region large-scale field-aligned currents (FAC) determined from the analysis of Triad vector magnetometer data recorded at McMurdo, include the following: 1) The cusp region FAC are most often observed in the midday sector of approx. 0900-1500 MLT (magnetic local time) in the south polar region. 2) During weakly disturbed polar geomagnetic conditions, the cusp region FAC are statistically confined to the invariant latitude range of approx. 75-80 deg. This area shifts equatorward and spreads in longitude during enhanced polar geomagnetic conditions. 3) The average intensity of the cusp region FAC in the south polar region observed during the period from the end of Mar. to Aug. 1974, and during weakly disturbed polar geomagnetic conditions, is approx 0.16 A/m. 4) In the south polar region the prenoon cusp region FAC are observed about twice as often during periods when the interplanetary magnetic field is directed toward the sun as during periods when the interplanetary magnetic field is directed away from the sun. 5) There is no special preference of the polarity of the interplanetary magnetic Bz component associated with the occurrence of the cusp region FAC.

K-21059
Park, C.G., **Whistler observations of substorm electric fields in the nightside plasmasphere,** *Journal of geophysical research,* Dec. 1, 1978 83(A12), p.5773-5777, 25 refs.

Whistlers recorded in the Antarctic were used to infer the east-west component of electric field in the nightside plasmasphere between L = 3 and 6 during moderate substorms. The results show eastward electric fields of approx 0.2 mV/m in the equatorial plane in the pre-midnight local time sector. Near midnight there is a sharp transition from these eastward fields to westward fields of approx 0.2-0.6 mV/m. The existence of westward substorm fields in the post-midnight sector has been reported in several previous papers as a prominent feature in the whistler data. These fields are distinct from quiet time fields that are directed eastward over the entire nightside and have an average magnitude of approx 0.05 mV/m. The substorm electric field pattern described here is consistent with previous ionosonde observations of large-scale distortions of the nightside F layer showing an uplifting in the premidnight sector and a lowering in the postmidnight sector. (Auth.)

K-21071
Wilcox, J.M., Svalgaard, L., Hedgecock, P.C., **Comparison of inferred and observed interplanetary magnetic field polarities, 1970-1972,** *Journal of geophysical research,* Sep. 1, 1975 80(25), p.3685-3688, ADA-019 601, 14 refs.

The inferred polarity (toward or away from the sun) of the interplanetary magnetic field at earth, using polar observations of the geomagnetic field, has been compared with spacecraft observations. A list published by Svalgaard (1974) of the inferred field polarities during 1970-1972 is found to be correct on 82% of the days. A near real time (same day) method of inferring the polarity of the interplanetary magnetic field, using geomagnetic observations at Vostok and Thule, is in use at the NOAA Space Environment Laboratory, Boulder, Colorado. During 1972, this method is found to be correct on 87% of the days. A list of "well-defined" sector boundaries at earth during 1970-1972 is given. (Auth.)

K-21088
Belousov, B.G., Zaĭtsev, A., **SD current direction changes in the vicinity of geomagnetic poles,** *U.S. Naval Oceanographic Office. Translation,* 1971 No.509, 6p., AD-719 989, For Russian original see 5K-8117. 7 refs.

The data of arctic and antarctic stations lying above lat. 75 degrees and collected during 1957-1964 show cyclic and seasonal changes in the direction of currents, as well as the relation between the direction of SD currents, the velocity of solar wind and intensity of neutron components of cosmic rays. The close statistical link that was established during the study suggests that the observed phenomena have common causes. (Auth.)

K-21133
Holzworth, R.H., Mozer, F.S., **Direct evidence of solar flare modification of stratospheric electric fields,** *Journal of geophysical research,* Jan. 20, 1979 84(C1), p.363-367, 21 refs.

Direct evidence of solar flare modifications of stratospheric electric fields is presented through comparison of atmospheric electric field variations with fluxes of solar protons that bombarded the atmosphere during the Aug. 1972 solar flares. Observed order of magnitude variations of the vertical electric field at 30-km altitude in anticorrelation with the intensity of solar protons are quantitatively

interpreted in terms of atmospheric conductivity variations produced by solar proton ionization of the air. Other geophysical data, including VLF whistler data recorded at Halley Bay, are presented, which indicate the state of the magnetosphere during this epoch and which further indicate a phenomenological coupling between atmospheric and extraterrestrial events. (Auth. mod.)

K-21136

Galkin, R.M., **Geomagnetic bays in Antarctica** [O bukhtoobraznykh geomagnitnykh vozmushcheniiakh v Antarktide], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1977 Vol.64, p.51-56, In Russian. 10 refs.

Studies at Mirnyy Station in 1970 identified disturbances marked by various combinations of positive and negative change in horizontal and vertical components. Bays are recorded simultaneously at several stations. The development of disturbances is associated with the high-latitude flux system and the consequent formation of eastern and western electrojets.

K-21137

Ul'ev, V.A., **PCA variations during shock-wave proton precipitation July 24-25, 1970** [Variatsii PPSh vo vremia vysypaniia protonov udarnoĭ volny 24-25 iiulia 1970 g.], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1977 Vol.64, p.57-63, In Russian. 10 refs.

An analysis of absorption recorded by riometers at 6 high-latitude stations in the northern and southern hemispheres during the 24-25 July 1970 proton storm allowed some conclusions about the structure of the magnetosphere and about the anisotropic characteristics of shock-wave proton streams. Study of the data shows that an open magnetospheric model is most suitable for interpreting absorption during the period under review. The effects of nonhomogeneity, asymmetry and homogeneity in absorption variations were noticed in different parts of the polar caps. The effects of nonhomogeneity and asymmetry are the result of anisotropic proton precipitation, the homogeneity, of isotropic. Discrepancies in time of maximum absorption at various stations relate to the mechanism by which protons penetrate the magnetospheric tail.

K-21161

Alekseev, I.I., Kropotkin, A.P., Shabanskiĭ, V.P., **Penetration of solar flare protons into the polar caps,** *Geomagnetism and aeronomy*, Aug. 1975 15(1), p.9-13, Translated from Russian. 20 refs.

The properties of MeV-proton fluxes that penetrate into the magnetosphere and produce a certain flux structure above the polar caps are discussed. This structure, which depends on the direction of the interplanetary field and on the anisotropy of the proton flux in the interplanetary medium, is computed in a model of the magnetosphere that takes into account the penetration of the interplanetary field into the cavity of the magnetosphere. (Auth.)

K-21162

Charakhch'ian, A.N., Bazilevskaia, G.A., Krasotkin, A.F., Charakhch'ian, T.N., **Cosmic-ray intensity in the near-earth atmosphere and at the surface of the earth,** *Geomagnetism and aeronomy*, Sep. 1975 15(2), p.164-168, Translated from Russian. 22 refs.

The results of measurements of ionizing and background radiations in the near-earth atmosphere and at the surface of the earth are reported. A method is described for separating radiation into its components, i.e., cosmic rays and natural radioactivity. The intensities of these components are given for several measurement sites. Readings were taken and compared for Murmansk, Moscow, Alma-Ata and Mirnyy Station, Antarctica.

K-21163

Ivanov, K.G., Evdokimova, L.V., **Electric field of polar caps under the assumption that the magnetopause is an anisotopic rotational discontinuity,** *Geomagnetism and aeronomy*, Sep. 1975 15(2), p.248-251, Translated from Russian. 14 refs.

The properties of the electric field E in polar caps are discussed on the assumption that the magnetopause is an anisotropic rotational discontinuity and on the basis of recent measurements of the profile of the E field across the caps at the heights of the polar ionosphere. (Auth.)

K-21164

Chukanov, A.A., Kleĭmenova, N.G., **Magnetic activity and subauroral ELF-VLF chorus,** *Geomagnetism and aeronomy*, Sep. 1975 15(2), p.314-315, Translated from Russian. 7 refs.

Data gathered at conjugate stations Kerguelen and Sogra were used to investigate the differences in geomagnetic situations during the generation of ELF and VLF magnetospheric emissions. Most chorus occurrences take place after the development of polar substorms, although a single substorm is not usually enough to produce chorus. Study of magnetic activity during the development of ELF and VLF chorus can be used to determine the region of generation of these emissions in the earth's magnetosphere. It seems probable that the subauroral ELF emissions on the surface of the earth are a superposition of plasmaspheric ELF hiss and ELF chorus arriving along the earth-ionosphere waveguide from the outer boundary of the plasmapause and generated during moderate magnetic activity.

K-21165

Rumiantsev, S.A., Smirnov, V.S., **Dependence of the north-south anisotropy of cosmic rays on the orientation of interplanetary shock waves,** *Geomagnetism and aeronomy*, Oct. 1975 15(3), p.332-334, Translated from Russian. 10 refs.

The north-south anisotropy of cosmic rays is investigated as a function of the azimuth angles of normals to the fronts of interplanetary shock waves from the time of beginning of Forbush decreases. The time difference between the beginning of a decrease at a northern and southern station is computed on the basis of a simple model of field geometry with the vectors of the normals and of the interplanetary magnetic field lying strictly in the plane of the ecliptic. It is shown that an important part in anisotropy is played by the gradient cosmic-ray flux. (Auth.)

K-21167

Bol'shakova, O.V., Troitskaia, V.A., Hessler, V.P., **Determination of the position of the polar boundary of the day cusp from the intensity of high-latitude pulsations,** *Geomagnetism and aeronomy*, Feb. 1976 15(4), p.569-570, Translated from Russian. 6 refs.

Long-period irregular pulsations, whose intensity depends mainly on the magnitude and direction of the vertical component of the interplanetary magnetic field B-sub-z, are specific of the polar cap and of the region of the day cusp. This relation proved to differ significantly for pulsations observed in the region of the day cusp and at higher latitudes. Studies were done at Vostok and Mirnyy Stations, and the relation found between the position of the polar boundary of the day cusp and the amplitude of the pulsations observed at the pole serves as a confirmation of the earlier assumption that the day cusp is the region of generation of long-period pulsations. When refined, the quantitative estimates of the relations between the shift of the boundary and the variation of the amplitude of the pulsations can be used to determine the movements of the polar boundary of the day cusp.

K-21168
Dzhordzhio, N.V., **High-latitude ionospheric inhomogeneities according to measurements on Kosmos 348,** *Geomagnetism and aeronomy,* Apr. 1976 15(5), p.607-610, Translated from Russian. 15 refs.

The Kosmos 348 measurements showed that considerable ionospheric inhomogeneities are virtually always observed in the precipitation region of the southern high-latitude nighttime ionosphere in the presence of fluxes of injected electrons with E = 0.03-5 keV that exceed the critical value for current instability, unlike in the presence of small fluxes. (Auth.)

K-21192
Helliwell, R.A., **Whistler-mode propagation studies using Navy VLF transmitters,** *Stanford University. Stanford Electronics Laboratories. Report,* May 1967 SU-SEL-67-050, 6p. AD-815 493.

The review is organized under five main topics: (1) whistler-mode propagation studies using controlled sources; (2) wave-particle interactions; (3) correlation of unique VLF propagation characteristics with other geophysical phenomena; (4) development of a VLF transmitting research facility in Antarctica; and (5) international cooperation. The history of using a controlled source as a tool for investigating the magnetospheric medium is reviewed. This technique has proven quite successful and will play a significant role in the future studies of whistler-mode propagation and environment modification. (Auth.)

K-21234
Bell, T.F., Helliwell, R.A., **Stanford University VLF wave injection experiment on the ISEE-A spacecraft,** *IEEE transactions on geoscience electronics,* July 1978 GE-16(3), p.248-252, 6 refs.

A Stanford University VLF wave injection experiment will be carried out as part of the ISEE mission. This experiment consists essentially of three basic components; a broad-band VLF receiver on ISEE-A, a broad-band VLF transmitter located at Siple Station in the Antarctic, and a number of ground stations in the Antarctic and Canada. This experiment is an outgrowth of VLF wave injection experiments carried out over the past four years, using the Stanford University transmitter at Siple Station. The purpose of this experiment is to study VLF-wave-particle interactions in the magnetosphere, with the goal of achieving a better understanding of this important portion of the earth's environment. The scientific background of the experiment is sketched and the functions of the ISEE-A instrument are described. (Auth.)

K-21236
Gassmann, G.J., **Ionosphere,** *McGraw Hill yearbook of science and technology,* 1972, p.257-260. AD-746 818.

Significant new studies of the ionosphere have occurred very recently. One line of research has involved precise measurements of the arctic and antarctic ionosphere (in the high latitudes). As a result, new models of the ionosphere based on changes in time, magnetic activity, and the seasons have been developed. Another investigation involved temporarily modifying the ionosphere with strong radio waves. The measurements obtained in this study elucidate the nature of the ionosphere's electron density and electron temperature.

K-21242
Matveeva, E.T., Troitskaia, V.A., Feĭgin, F.Z., **Isolated bursts of type Pc1b geomagnetic pulsations at high latitudes,** *Geomagnetism and aeronomy,* Aug. 1978 18(1), p.75-78, Translated from Geomagnetizm i aeronomiia. 16 refs.

The results are presented of an analysis of a new type of geomagnetic pulsation in the frequency range of Pc 1, 2. Experimental data obtained at Cape Zhelaniya, Heiss Island and Mirny are used in the investigation of Pc 1(Pc 1b) bursts. Several characteristics of these pulsations are established, and an interpretation of this phenomenon is given. (Auth.)

K-21264
Shirochkov, A.V., **Polar cap auroras analyzed by ionospheric forward scatter data** [Siianiia v poliarnoĭ shapke, po dannym radiolinii ionosfernogo rasseianiia vpered], *Problemy Arktiki i Antarktiki: Sbornik statei,* 1977 No.49, p.77-80, In Russian. 10 refs.

The nature and distribution of signals caused by polar auroras are analyzed on the basis of forward scatter observations made at McMurdo-West during 1964-1969. One group of these signals is a part of the processes taking place on the nighttime side of the auroral oval, and another can be viewed as an ionospheric phenomenon of the daytime polar cusp.

K-21283
Suzuki, Y., **Auroral infrasonic waves and the auroral electrojet,** *Journal of atmospheric and terrestrial physics,* Jan. 1979 41(1), p.11-23, 12 refs.

Using models of a line current and a band current with a parabolic intensity distribution across the width, techniques to deduce the speed, the direction of motion and the zenith crossing time of the electrojet from observations of surface magnetic perturbations made at Showa Station are studied. From the current motions deduced by these techniques and the observed traces of the Auroral Infrasonic Waves (AIW), the following four facts are established. (1) The time between the zenith crossing of the current and the arrival of AIW at the ground is reasonable. (2) The direction of travel of AIW is considered to be parallel to the current drift or parallel to the current flow. (3) The trace velocity of AIW is equal to the calculated drift velocity of the current. (4) AIW can be produced only by a line (or a narrow band) current. (Auth. mod.)

K-21321
Burke, W.J., Kelley, M.C., Sagalyn, R.C., Smiddy, M., Lai, S.T., **Polar cap electric field structures with a northward interplanetary magnetic field,** *Geophysical research letters,* Jan. 1979 6(1), p.21-24, 8 refs.

Polar cap electric fields patterns are presented from times when the S3-2 Satellite was near the dawn-dusk meridian, and IMF data were available. With B-sub-z equal to or greater than 0.7 amma, two characteristic types of electric field patterns were measured in the polar cap. In the sunlit polar cap the convection pattern usually consisted of four cells. Two of the cells were confined to the polar cap, with sunward convection in the central portion of the cap. The other pair of cells was marked by anti-sunward flow along the flanks of the polar cap and by sunward flow in the auroral oval. These observations are interpreted in terms of a model for magnetic merging at the poleward wall of the dayside polar cusp. The sunward flow in the auroral zone is not predicted by the magnetic model and may be due to a viscous interaction between the solar wind and magnetosphere. The second type, which was observed in some of the summer hemisphere passes and all of the winter ones, was characterized by an electric field pattern which was very turbulent, and may be related to inhomogeneous merging. (Auth.)

K-21349
Charakhch'ian, T.N., **Effect of the total magnetic field of the sun on cosmic-ray modulation in the mid-latitude stratosphere,** *Geomagnetism and aeronomy,* Oct. 1978 18(2), p.131-137, 8 refs. Translated from Geomagnetizm i aeronomiia.

The 11-year cosmic-ray modulation at constant pressure surfaces of 20, 50, 90, and 160 g/sq cm in the stratosphere at Mirnyy, Murmansk, Moscow, and Alma-Ata is investigated. The dependence of the relative variation in cosmic-ray intensity on the magnitude of the latitudinal effect is analyzed. This relation differs significantly at middle and high latitudes. (Auth.)

K-21353

Potemra, T.A., Bostrom, C.O., Doering, J.P., Lee, J.S., **Observations of low-energy electrons from AE-C in the south polar cusp during the geomagnetic storm of September 21, 1977,** *Space science reviews,* Nov. 1978 22(5), p.659-666, 17 refs.

The AE-C spacecraft skimmed through the southern polar cusp at a 400 km altitude during a large geomagnetic storm on September 21, 1977. This period has been designated as a special IMS period, and the AE-C data were acquired close to the times that data were acquired by the DMSP satellite at nearly the same location over the southern polar cap, and by the GEOS satellite located near the noon-meridian in the northern hemisphere. Low energy electrons (1-500ev) were measured with the photoelectron spectrometer equipment experiment onboard AE-C. A region of intense precipitating electron fluxes was observed near 0924 UT on September 21, 1977 extending from 69 degree invariant latitude at 1100 MLT to 72 degree invariant latitude at 1152 MLT. From the spectra of the precipitating electrons, this region is identified as the southern polar cusp. Since the Kp equals 7 during this time, the displacement of the cusp down to these low latitudes is not unreasonable. Particle data obtained from the DMSP satellite on orbits close to AE-C, confirm that the position of the cusp was rapidly changing during this period, and was displaced to latitudes equatorward of the quiet time position. A second region of intense fluxes of precipitating electron was observed by AE-C at approximately 0933 UT from 69 degree invariant latitude near 1700 MLT to 66 degree invariant latitude near 1730 MLT. This region of low energy electron fluxes is characterized by slightly harder energy spectra and is interpreted as being the afternoon auroral zone. (Auth. mod.)

K-21361

American Geophysical Union, **IAGA/IAMAP Joint Symposia, abstracts,** *American Geophysical Union. Transactions,* Aug. 1977 58(8), p.681-832.

Seventeen of the papers presented at the IAGA/IAMAP Symposia relate to the Antarctic and Southern Ocean. Nine report interim results of Antarctic IMS (p.779-81), one pertains to geomagnetic pulsations in association with precipitating electron modulations (p.722), one concerns atmospheric oceanic boundary layers in connection with ice cover (p.809), five relate to POLEX work with the planetary boundary layer, (p.809-10) and one reports satellite imaging of sea ice and ice sheet (p.812).

K-21378

Kulitskaia, IA.F., Iordanashvili, T.G., IAniv, I.D., **Determining an astronomical reference point at Molodezhnaya Station, Antarctica** [Opredelenie opornogo astronomicheskogo punkta na stantsii Molodezhnaia v Antarktide], *Geodeziia i kartografiia,* Oct. 1978 No.10, p.32-36, In Russian. 7 refs.

The progress of work carried out at the astronomical point at Molodezhnaya Station, methodology and accuracy of the data are discussed. Latitude and longitude accuracy is so great that the installation can be considered a reference point; it is the first time studies of this type have been done in Antarctica.

K-21380

Gupta, J.C., Niblett, E.R., **On the quiet-time Pc5 pulsations events (spacequakes),** *Planetary and space science,* Feb. 1979 27(2), p.131-143, Refs. p.142-143.

A quiet-time Pc5 event (designated Spacequake) of March 18, 1974, first noted on the Fort Churchill magnetogram, was studied using global data. Its amplitude was found to be largest in the northern part of the auroral zone and its period seemed to increase with latitude. The clockwise polarization of the event noted at Baker Lake and higher latitudes changed to counterclockwise at Fort Churchill in X-Y, X-Z and Y-Z planes. The resonance of a field line excited due to an instability of the Kelvin-Helmholtz type may have given rise to the observed event. It is conjectured that the cause of instability at this high altitude was internal convection of the magnetosphere. Similar quiet-time events from four Canadian observatories were selected from approximately 11 years of magnetograms and their statistical analysis revealed that occurrences maximized near dawn and dusk, the amplitude-latitude profile peaked at Great Whale River, periods increased with increasing geomagnetic latitudes, a large number of events occurred in January, February and March every year, and frequency of occurrence increased with increasing sunspot numbers. Comparison of these results with those available in the literature from analyses of satellite data clearly indicate that quiet-time Pc5 events (Spacequakes) originate in the outer magnetosphere. Among the many stations studying the event were Dumont d'Urville, South Pole and Vostok. (Auth. mod.)

K-21381

Feĭgin, F.Z., Kurchashov, IU.P., Troitskaia, V.A., Fligel', D.S., Dobeš, K., **Method of locating the Pc1 source and hot plasma parameters in the generation region,** *Planetary and space science,* Feb. 1979 27(2), p.151-158, 23 refs.

A method of estimating hot and cold plasma parameters using ground Pc1 observations is proposed. The values of both hot and cold plasma concentrations, proton energy and temperature anisotropy in the Pc1 generation region are calculated. It is shown that the most appropriate (effective) indicator of the L-shell, where Pc1 are generated, is the group delay of wave packets. Data were recorded at Sogra and Kerguelen Island. (Auth. mod.)

K-21398

Kanonidi, Kh.D., Osipov, N.K., **Magnetic quiet-day solar daily variations in magnetically conjugate regions,** *Geomagnetism and aeronomy,* Oct. 1977 17(2), p.191-193, 5 refs. Translated from Geomagnetizm i aeronomiia.

The Sq variations are investigated on the basis of data from Kerguelen and several mid-latitude stations of the northern hemisphere. It is assumed that the variations in the structure of the Sq field at middle latitudes are associated with variations of the interplanetary magnetic field. (Auth.)

K-21408

Cambou, F., Sagdeev, R.Z., Zhulin, I.A., **The ARAKS project,** *Space science instrumentation,* Nov. 1978 4(2/3), p.117-121, 3 refs.

Soviet-French active experiments were carried out at the magnetically conjugate points, Kerguelen Island and Arkhangelsk. Named ARAKS (Artificial Radiation and Aurora between Kerguelen and the Soviet Union), the studies on electron beams injection into the magnetosphere were done between January 26 and February 15, 1975. This paper serves as an introduction to a series of articles describing various aspects of the program (see K-21409 through K-21426).

K-21409
Charles, G., Dokukin, V.S., **Payloads for Project ARAKS,** *Space science instrumentation.* Nov. 1978 4(2/3), p.123-129.

This article describes the general operation of the Eridan rocket used for ARAKS and the payloads, which comprise two sections—the ejectable nose cone and the Eridan payload, which, in turn, includes a platform carrying four particle detectors and an electron accelerator canister on the bottom of which is the active neutralization system and the electrodes for potential measurement.

K-21410
Paton, B.E., **Powerful electron accelerator for active space experiments,** *Space science instrumentation,* Nov. 1978 4(2/3), p.131-137, 5 refs.

The paper describes the electron accelerator for the ARAKS experiment. The accelerator provides for injection of an electron beam of 0.5 A. Energies of 15 and 27 keV can be selected by the built-in programmer with a beam deflection from the gun axis of 70, 0 and -70 deg. (Auth.)

K-21411
Morozov, A.I., **Caesium plasma source for the ARAKS experiment,** *Space science instrumentation.* Nov. 1978 4(2/3), p.139-141, 1 ref.

To improve the process of positive charge neutralization on a rocket body a caesium plasma source was designed. The paper describes the design and operation of this source. (Auth.)

K-21412
Delahaye, J.Y., Lavergnat, J., Ney, R., Karczewski, J.F., **Wave measurements in the ARAKS experiment,** *Space science instrumentation,* Nov. 1978 4(2/3), p.143-169, 16 refs.

A rocket-borne receiver, designed to measure the main characteristics of the waves generated principally through interaction of the ionospheric plasma and an electron beam, has been constructed. The electron beam is produced by an electron gun mounted on the rocket payload. In order to get information on the wave polarization, magnetic antennas, using the flux feedback properties, and electric antennas consisting of two spherical vitreous carbon probes and a conventional dipole are installed on the nose cone. Since the telemetry capacity is limited, partial processing of the data is carried out inside the receiver, using amplitude compression (AGC circuits, logarithmic amplifiers) and reduction of the spectrum bandwidth (frequency analysis system). Some compatibility problems between the receiver and other equipment are discussed. (Auth.)

K-21413
Gusev, G.A., Zhulin, I.A., Kushnerevskiĭ, IU.V., Migulin, V.V., Pulinets, S.A., **Broad-band wave measurements in the ARAKS experiment,** *Space science instrumentation,* Nov. 1978 4(2/3), p.171-176, 2 refs.

This paper describes a broad-band system designed for the detailed study of wave processes in the ionosphere in the 0.1-5 MHz range. The system was developed for the detection of radio wave pulses with a short life-time and nonlinear spectrum evolution. (Auth.)

K-21414
Barthe, H., Cotin, F., Rème, H., **Electron spectrometers for the study of artificially injected particles during the ARAKS experiments,** *Space science instrumentation.* Nov. 1978 4(2/3), p.177-187, 4 refs.

This paper describes the particle experiments carried out entirely by the French section of the ARAKS collaboration. Spectrometers were designed to measure the angle and energy distribution of electrons in 4 ms at 8 energy levels from 4 to 35 keV in 9 angular fields. They were launched on Eridan rockets. Wide-angle detectors especially designed to avoid disturbing wave measurements were launched in the nose-cone. (Auth.)

K-21415
Volkov, G.I., **Wide-angle electron detector,** *Space science instrumentation,* Nov. 1978 4(2/3), p.189-199, 13 refs.

The design, functioning, and main calibration characteristics of a wide-angle detector, capable of recording electrons with energies of 8 or more keV and insensitive to u.v. solar radiation, are described. A description of the sensor (electron trap) and its electronics in the analog (DEGAFOC) and counting (DEGAFOI) modes is given. Examples of telemetry recordings, illustrating the operation of the detector, are included. (Auth.)

K-21416
Managadze, G.G., Liakhov, S.B., Tabaldiev, S.R., **Low energy electron spectrometer *SERBE,*** *Space science instrumentation.* Nov. 1978 4(2/3), p.201-204, 2 refs.

This paper describes an electron spectrometer in the energy range 1-16 keV and with a sensitivity of approx 800,000/cm s ster keV. The instrument has two identical measuring heads. The sight line orientation of each head is independently variable over a wide range and is adjustable from the ground. Energy separation of electrons is performed, using a cylindrical electrostatic analyzer with a period of 20 ms. The dynamic range of the device is 500,000. The sensor had built-in high-voltage breakdown protection. The SERBE instrument in both ARAKS launchings operated failure-free and according to schedule. (Auth.)

K-21417
Gringauz, K.I., **Device for determination of the electrical potential of a rocket carrying an electron gun,** *Space science instrumentation.* Nov. 1978 4(2/3), p.205-212, 5 refs.

Data on the principle of operation, sensors and electronics of a device for determination of the electrical potential relative to the surrounding medium of a rocket carrying an electric gun are presented. The device operated successfully on board an Eridan rocket during the ARAKS experiment. (Auth.)

K-21418
Berthelier, J.J., Pirre, M., **Ion analyzers for measurement of D.C. electric field and ion temperature,** *Space science instrumentation.* Nov. 1978 4(2/3), p.213-226, 18 refs.

This paper presents a description of the ion analyzers for measurement of electric fields and ion temperature, which were part of the nose-cone experiment package in the ARAKS experiment. Principles of measurement and theoretical models used in numerical calculations are presented, as well as a brief description of the electronics and modes of operation. The accuracy of the instrument was estimated to be 2-3 mV/m for the electric field and about 150 K for the ion temperature. Results from preliminary tests in a plasma tank are given. (Auth.)

K-21419
Karczewski, J.F., Moreau, J.M., **Attitude measurement with Hall-effect magnetometers,** *Space science instrumentation.* Nov. 1978 4(2/3), p.227-237, 6 refs.

A new Hall-effect magnetometer for rocket aspect sensing measurement is described. The major ideas for the design are discussed and the test results are given. (Auth.)

K-21420
Weill, G., Fehrenbach, M., Berger, J.P., Barat, C., Magenc, C., **Optical observations systems for the ARAKS experiment,** *Space science instrumentation,* Nov. 1978 4(2/3), p.239-250, 2 refs.

An electron beam, injected into the magnetosphere from the Kerguelen area by the ARAKS rocket experiment, was expected to cause luminous radiation by interaction with the atmospheric gas at about 100-km altitude at the northern end of the magnetic line passing through the rocket. Optical tracking of this artificial aurora effect was to provide an accurate determination of the conjugacy at an L value of about 4. Numerical calculations were carried out using different magnetospheric models, particularly MAGNET and POGO 71. The conjugate point of Kerguelen Island was located in the Karpogory region (U.S.S.R.) and served as a reference for pointing terrestrial observation stations. Two imaging systems for the experiment were developed in France and were operated in the U.S.S.R. within the Soviet three-site network about 100 km apart, so that the phenomenon could be located by triangulation. Two different, advanced detection techniques for low level imagery were used; a silicon diode matrix video tube in one case and a curved microchannel plate image intensifier in the other. A lower than expected optical signal level, combined with poor weather conditions in the Karpogory region in early 1975, precluded effective optical detection of the ARAKS electron beam. The present paper provides a brief description of the image-forming systems which have been developed for use in ARAKS and future experiments. (Auth.)

K-21421
Nesmianovich, A.T., Ivchenko, V.N., Milinevskiĭ, G.P., **Television system for observation of artificial aurorae in the conjugate region during the ARAKS experiment,** *Space science instrumentation,* Nov. 1978 4(2/3), p.251-252, 3 refs.

A television system for the observation of artificial aurorae is described. The sensitivity of this system in the region from 0.38 to 0.80 micrometers is 9.0 to 9.5 stellar magnitudes. The rate of recording from the kinescope monitor is 5 frames per second. (Auth.)

K-21422
Evlashin, L.S., Tarasova, T.M., Roldugin, V.K., Sukhoivanenko, P.IA., **High sensitivity optical equipment for detection of weak luminous objects,** *Space science instrumentation,* Nov. 1978 4(2/3), p.253-255, 3 refs.

A summary description of photometric, television and photographic instrumentation is given in this paper. The instruments were used to register the optical effects of artificial aurorae generated during the experiments in the ARAKS project. (Auth.)

K-21423
Liachov, S.B., Managadze, G.G., ***Photozavr* modulation photometer,** *Space science instrumentation,* Nov. 1978 4(2/3), p.257-260, 3 refs.

A description is given of a modulation photometer which records weak optical line emission. Separation of a weak spectral line from the intense background is achieved by modulating the signal through rotating an interference filter. The filter is placed under an angle in a rotatable cage. The cage rotation axis makes an angle with the optical axis of the photometer as well. This technique has many advantages compared with cam mechanisms. It provides a sensitivity of about 5 rayleigh in the presence of a background intensity of 100 rayleigh. (Auth.)

K-21424
Markeev, A.K., Fomichev, V.V., Karachun, A.M., **Radiospectrograph in the frequency range of 25 to 50 megahertz,** *Space science instrumentation,* Nov. 1978 4(2/3), p.261-262, 4 refs.

A radiospectrograph of the type ordinarily used for the investigation of the dynamic spectrum of solar radio bursts is briefly described. The spectrum analyzer covers the range of 25 MHz to 50 MHz at a rate of 50 sweeps per second. This device was used for observation of radioemission in the ionosphere caused by the injection of artificial electron beams during the ARAKS experiment. (Auth.)

K-21425
Ruzhin, IU.IA., **Ground-based observations of h.f. radioemission in ARAKS,** *Space science instrumentation,* Nov. 1978 4(2/3), p.263-264, 3 refs.

H.f. radioemission was detected on the ground during the ARAKS experiment by specially prepared equipment. A description of this equipment is given. (Auth.)

K-21426
Observations carried out in the field at Kerguelen Station during the ARAKS experiment, *Space science instrumentation,* Nov. 1978 4(2/3), p.265-266.

The following data were recorded during the ARAKS experiment at the Port-aux-Français station on Kerguelen Island: aurora and airglow by photometers, all-sky camera, and personnel; absolute geomagnetic observations, as well as those of both slow and rapid variations; ULF, ELF and VLF magnetospheric measurements; and ionospheric data by vertical incidence soundings, riometers and intensity and phase measurements from VLF transmitters.

K-21459
Shumilov, I.A., **Relationship between ionospheric radiowave absorption and magnetic disturbances in Antarctica** [Sviaz' pogloshcheniia radiovoln v ionosfere s magnitnoĭ vozmushchennost'iu v Antarktide], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1978 Vol.69, p.80-87, In Russian. 6 refs.

Variations in radio wave absorption in the ionosphere and in magnetic disturbances at Molodezhnaya and Mirnyy Stations in 1974 are analyzed. There is a linear dependence between the two determined by the energy of precipitating electrons. Seasonal variations in absorption, magnetic disturbances and the coefficient characterizing their relationship are presented.

K-21461
Park, C.G., Flint, R.B., **Effect of solar magnetic sectors on the vertical component of the atmospheric electrical field at Vostok** [Vliianie solnechnykh magnitnykh sektorov na vertikal'nuiu sostavliaiushchuiu atmosfernogo elektricheskogo polia na stantsii Vostok], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1978 Vol.69, p.90-94, In Russian. 10 refs.

Variations in the vertical component of the atmospheric electric field at Vostok from March to November 1974 were observed. Intensity decreased by approximately 15% 1-3 days after it passed the solar magnetic sector boundaries. This effect is more pronounced in winter when Vostok is in darkness for a prolonged period. No significant difference between sector boundaries of the plus-minus and minus-plus types was noticed. Apparently in clear weather the global atmospheric electrical field is an important factor in the relationship between solar activity and weather.

K-21462

Barmin, N.A., **Seasonal displacement of the auroral oval depending on geophysical data** [Sezonnye peremeshcheniia avroral'nogo ovala po geomagnitnym dannym], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy*, 1978 Vol.69, p.95-99, In Russian. 6 refs.

By correlating data on geomagnetic intensity with those on the planetary index Ap at Mirnyy and Vostok, the author concludes that there is a seasonal shift in the auroral oval—away from the sun in summer, toward it in winter. This result agrees with earlier findings in the northern hemisphere.

K-21477

Koons, H.C., **Stimulation of Pc1 micropulsations by controlled VLF transmissions,** *Aerospace Corporation, El Segundo, Ca. Technical report*, Apr. 7, 1977 No.0077(2960-02)-2, 24p.

During controlled VLF transmission experiments from a site near Anchorage, Alaska, Pc1 micropulsations, which can be associated with the VLF transmission program, were observed by detectors at College, Alaska, Dunedin, New Zealand, and Macquarie Island. The micropulsation event started shortly after the transmitter began sending a simple repetitive pulse program at 6.6 kHz. The program consisted of a 5-sec long pulse transmitted every 30 sec. After the onset of the event, a complex sequence of micropulsations appeared between 1.0 and 1.33 Hz. During the simple repetitive program, the pulsations recurred every 90 sec. The micropulsations began 15 min. after satellite 1972-76B, at low altitude in the conjugate region of the transmitter, observed proton fluxes that could be identified on a one-for-one basis with irregularly spaced pulses from the transmitter. Calculations suggest that the 6.6-kHz whistler-mode wave and a 1-Hz hydromagnetic wave resonate with protons of the same parallel velocity near L=4.0. The observations suggest that the micropulsations were stimulated by the VLF transmissions, with the protons playing a role in the interaction. (Auth.)

K-21479

Watson, M.D., **Belcher Islands Expedition—1971,** *National Research Council, Canada. Radio and Electrical Engineering Division. Bulletin,* July-Sep. 1971 21(3), p.5-8, 2 refs.

The conjugate-point auroral photometry program carried out since 1966 at Great Whale (Quebec) and Byrd Station and descriptions of the recently developed automatic photometer stations installed as part of this effort have been covered by the literature. Unfortunately, when these stations were recovered, it was found that all four channels contained auroral intensity values of zero or nearly zero. In the laboratory it was determined that the high voltage was only 40 percent of its proper value, and resulting sensitivity was about 1.6% of nominal. Some inherent fault in the circuitry is suspected.

K-21623

Rosenberg, T.J., Detrick, D.L., Maclennan, C.G., Lanzerotti, L.J., **High time resolution riometer studies of magnetospheric electron precipitation,** *Antarctic journal of the United States*, Oct. 1978 13(4), p.197-199, 9 refs.

A fast-response riometer (0.25 sec time constant) operating at 30 Mhz has been used to examine data at Siple Station in order to determine whether absorption measurements can resolve precipitation time structures that approach time scales of a fraction of a second to several seconds. An example of a 1-min segment of X-ray, riometer, and magnetometer data obtained during an electron precipitation event composed of a large number of microbursts is illustrated and described. It would appear that under certain conditions, absorption fluctuations approaching the time scale of microbursts may be resolvable with riometers.

K-21624

Siren, J.C., Rosenberg, T.J., Detrick, D., **Precipitating electrons observed from balloons launched near the conjugate point of Siple Station, Antarctica,** *Antarctic journal of the United States*, Oct. 1978 13(4), p.199, 3 refs.

This report summarizes the X-ray data obtained from two balloon flights launched from Roberval, Canada, the northern terminus of the geomagnetic field line through to Siple Station, on Sep. 18 and 24, 1977. The purpose of the campaign was to investigate the wave-particle interactions that tend to occur during quieting intervals following magnetic activity. A figure shows time plots of the 25- to 500-kilo electron volt X-ray count rates from the two flights.

K-21625

Arnoldy, R.L., Lewis, P.B., Jr., Cahill, L.J., Jr., **Correlative Pc 1 micropulsations and particle precipitation,** *Antarctic journal of the United States*, Oct. 1978 13(4), p.200-201, 5 refs.

By an analysis of the polarization of the Pc 1 signals and by correlating the events with particle precipitation measured at Siple it was attempted to identify the source magnetic field lines in the antarctic ionosphere. A particle precipitation technique has been used in which it is assumed that the wave-particle interaction in the magnetosphere generating Pc 1 lowers the mirror point of the resonating particles, precipitating them into the atmosphere and thereby identifying the source field line. Riometer absorption events correlated with IPDP (intervals of pulsation of diminishing period) micropulsations primarily have been studied. Two events in which auroral light measured by photometer at Siple was closely correlated with Pc 1 have also been studied. The micropulsation signals in each event were left polarized, identifying the source region with left-polarization. It is concluded that Pc 1 signals are left-polarized only when the station is within approx 100 km of the source magnetic field line.

K-21626

Helliwell, R.A., Chang, D.C.D., **Siple/Roberval magnetospheric wave-wave interaction experiments,** *Antarctic journal of the United States*, Oct. 1978 13(4), p.202-203, 2 refs.

Wave-wave interaction experiments performed between Siple Station and its conjugate point located at Roberval, Canada are briefly described. The first experiment resulted in the accidental discovery of a type of triggered emission termed the band-limited impulse (BLI). The BLI appeared at the end of an amplified Siple pulse as a burst of noise about 150 Hz wide. Related to the BLI is the so-called gap-induced emission. Rising emission was triggered during a 10-msec gap at t=400 msec, in a 1-sec Siple pulse at 5 kHz. In both types of emission the radiation components from the wave-organized electrons switch from the forced mode to their natural modes at the end of the triggering wave. The next step in the study of gap triggering is to reduce the gap length.

K-21627

Inan, U.S., Bell, T.F., **ISEE-1 satellite observations of signals from the Siple transmitter,** *Antarctic journal of the United States*, Oct. 1978 13(4), p.203-204, 4 refs.

One of the main goals of this VLF wave-injection experiment on the International Sun Earth Explorer (ISEE-1) spacecraft is to make *in situ* studies of the interactions between coherent VLF waves and energetic particles in the magnetosphere. The ISEE 1 and 2, which form a mother and daughter satellite pair, were launched on Oct. 22, 1977. Both satellites are equipped with broadband VLF receivers, which are described. Early results from the ISEE-1 indicate that non-ducted waves injected by ground transmitters are more widespread than suggested by previous measurements. Signals from the Siple transmitter have been observed inside the plasmasphere near the

geomagnetic equator on magnetic field lines between L=2 and L=5. The amplitude of the signals ranges from 5 to 50 microvolts per meter. An example of the reception of Siple signals on the satellite is shown and described.

K-21628
Doolittle, J.H., Armstrong, W.C., Katsufrakis, J.P., Carpenter, D.L., **Wave-induced particle precipitation effects at Siple Station,** *Antarctic journal of the United States*, Oct. 1978 13(4), p.204-206, 2 refs.

A specific objective of the 1977 program at Siple Station was the observation of correlations between discrete VLF wave events and optical emissions at 4,278 A generated by precipitating electrons. The basic strategy for the investigations is outlined. The experiments, conducted in the dark months of May-Aug. 1977 using a photometer, were successful; obvious one-to-one correlations between VLF noise burst activity and optical emission were identified for the first time. During the investigations, an unanticipated new result was obtained: a direct correlation was observed between magnetic pulsations at approx 0.8 Hz and 4,278 A emission. Field chart records showing the correlated events are presented and analyzed.

K-21629
Park, C.G., **Power line radiation in the magnetosphere,** *Antarctic journal of the United States*, Oct. 1978 13(4), p.206-208, 5 refs.

The main objective of this study was to find out how weekly variations of power consumption in eastern Canada affect the magnetospheric VLF wave activity as observed at Siple Station. In the first part of the study, powerline radiation-induced (PLR) emissions were identified on broadband spectrograms of synoptic recordings made at Siple between 1973 and 1975, on 44 days out of a total of 255 days surveyed. In the second part of the study, the amplitude of magnetospheric waves in the 2-4 kHz range was measured at hourly intervals, using continuous data from Siple in 1974 and 1975. It is suggested that the Sunday decreases observed in magnetospheric wave activity may be attributable to reduced power consumption. PLR appears to have important effects on the overall VLF wave environment in the inner magnetosphere.

K-21630
Trabucco, W.J., Paschal, E.W., **Jupiter: a new tool for magnetospheric research,** *Antarctic journal of the United States*, Oct. 1978 13(4), p.208-209.

A new transmitter, Jupiter, will replace the old 100-kw transmitter, Zeus, when the replacement facility for the original Siple Station is ready for occupation. Jupiter is a broadband audio amplifier, capable of over 100 kw of power output, and of transmitting complex signals ranging from single frequencies to complex multiple-frequency formats with rapid frequency and amplitude variations. The transmitter will be coupled to the Siple 21-km dipole antenna through a new tuning network, and the system will be controlled and programed by a Data General Nova 3 computer. Details of the design and capabilities of the system are given. With the new transmitter, Siple will be the only facility in the world capable of transmitting significant radio power at frequencies as low as 1 kHz.

K-21631
Akasofu, S.-I., **Energy flux in the solar wind and magnetospheric substorms,** *Antarctic journal of the United States*, Oct. 1978 13(4), p.209-211, 2 refs.

The studies reported herein have been directed toward the search for an interplanetary parameter that can predict the size of the auroral oval on the basis of antarctic auroral data. A quantity has been discovered which correlates well with the auroral electrojet index. The quantity is the product of the electromagnetic energy flux of the solar wind and the area of the magnetosphere through which the electromagnetic energy flux enters; the size of the area is controlled by the orientation of the IMF vector with respect to that of the magnetospheric magnetic field at the front of the magnetosphere. Examples of the correlation are given.

K-21632
Chivers, H.J.A., **High-latitude ionospheric absorption,** *Antarctic journal of the United States*, Oct. 1978 13(4), p.211-212, 1 ref.

Observations of the ionospheric absorption of galactic radio waves, using the riometer technique, continued during 1977 at South Pole, Siple, McMurdo, and Vostok Stations, together with the Northern Hemisphere conjugate stations. Investigations of fast onset absorption events (spikes) observed at South Pole station during 1975 and 1976 were completed during the year. Sample recordings of spike events are reproduced and analyzed. The results indicate that the spike events are caused by a rapid onset of precipitation over a narrowly confined region that gradually spreads to cover the whole beam in a period of 10 min or more. The peak in the absorption appears to be caused by a rapid increase in the precipitated flux rather than by a dynamic change in the spectrum of precipitation.

K-21633
Zaĭtsev, A.N., **Polar cap geomagnetic variations studies,** *Antarctic journal of the United States*, Oct. 1978 13(4), p.212-214, 5 refs.

Geomagnetic field variations serve as basic data for speculations about magnetospheric substorm patterns. Observations were made with a Soviet-made field-type magnetometer installed at South Pole station in Feb. 1977. The sensitivity of the instrument is described. The first of two figures shows a sample of a magnetospheric substorm as recorded at South Pole station on the night-side of the auroral oval. The figure is an example of a magnetospheric substorm in which electrojets exist simultaneously in opposite directions. The second figure shows correlative graphs of magnetometer, photometer, and riometer data recorded when the station was on the day-side of the auroral oval, close to the cleft of the magnetosphere. During moderate magnetic activity on the day-side of the auroral oval specific geomagnetic variations were observed that correspond to the cleft of the magnetosphere. The appearance of the cleft at geomagnetic latitudes aground 74 deg can be detected easily with the photometer.

K-21634
Heacock, R.R., **High time resolution studies of sudden impulses,** *Antarctic journal of the United States*, Oct. 1978 13(4), p.214-215.

This study is concerned with high time resolution comparisons of onset times for sudden impulses (SI) in the earth's magnetic field, using data from Vostok and from other induction magnetometer sites. An example is shown of a magnetic storm sudden commencement (SSC) with data from Vostok, College, Alaska, and Sachs Harbour. The onset of oscillations at periods T=5 to 10 sec was nearly simultaneous at these three widely separated sites. There was an exceptionally clear onset of cosmic noise absorption at College as detected by the 30 mHz riometer. It is suggested that SSC's and SI's are useful tools for studying hydromagnetic wave characteristics and associated particle precipitation characteristics.

K-21635
Pomerantz, M.A., Duggal, S.P., **Cosmic ray intensity variations,** *Antarctic journal of the United States*, Oct. 1978 13(4), p.215-217, 3 refs.

Four ground level enhancement (GLE) events observed with the new high-sensitivity detector at the South Pole are briefly described. The GLE's on Sep. 19 and 24, 1977 were unusual in that they were produced by a vestigial active region belonging to the previous solar

cycle, long after the start of the present cycle. The event of Nov. 22, 1977 was the greatest observed during the current solar cycle. The observations during a GLE on May 7, 1978 differed drastically from the normal pattern in that the solar particle flux in the polar region was smaller than that at a lower latitude. Another unprecedented event was the first observation of symmetrical equator-pole anisotropy during a cosmic ray storm.

K-21664

Coulson, K.L., Carroll, J.J., Walraven, R.L., **Light intensity and polarization measurements at the South Pole,** *Nevada. University. Desert Research Institute. Technical report,* [1976] Ser. P, No.18, Report on polar meteorology workshop, Reno, Nevada, 1975, edited by J.A. Warburton, p.52-53, 2 refs.

DLC GB611.N4

The main objective of the research project for skylight measurements under discussion is to provide data for a verification of the theory of radiative transfer in planetary atmospheres of known optical thickness and composition, and to account properly for the effects of reflection from the extensive and uniform surface represented by the snow field at the South Pole. A secondary but still very important objective is to repeat the experiment on an intermittent basis over a sufficient time over period to detect any possible secular buildup of particulate-type pollution in the Antarctic and, by inference, any worldwide buildup of atmospheric aerosols. The authors outline the approach to be taken in this work and suggest likely avenues for continuing research into light intensity and polarization.

K-21674

Terasawa, T., **Acceleration mechanism of auroral particles: a review,** *Antarctic record,* Jan. 1979 No.63, p.1-16, In Japanese with English summary. Refs. p.15-16.

A review of recent observational and theoretical results on the problem of auroral particle acceleration is given. First, evidence of the existence of field-aligned potential drops as an agent of particle acceleration is summarized. Second, the necessity for external electric generators is shown, and several models of electric generator are reviewed. Third, the structure of the particle acceleration region is considered; Chiu-Schulz magnetic-mirror theory of the structure of electric potential is criticized, and recent evidence of the double-layer formation in laboratory and computer experiments reviewed briefly. (Auth.)

K-21675

Kubo, H., Murata, S., Itoh, T., Kokubun, S., **Observation of precipitating electrons on board the S-310JA-2,** *Antarctic record,* Jan. 1979 No.63, p.17-28, 5 refs. In Japanese with English summary.

A cylindrical electrostatic analyzer on board the Japanese antarctic sounding rocket S-310JA-2, launched on February 10, 1977 at Syowa Station, obtained the energy spectra of energetic electrons in the Antarctic polar ionosphere. The geomagnetic activity was high, and there was a diffuse aurora at the time of launch. The measured electron flux was about 1,800 electrons per sq cm/sec/str/eV at the energy of 4.2 keV and about 23,000 electrons per sq cm/sec/str/eV at 740 eV. The electrons whose energy was in the neighborhood of 500 eV had a considerable pitch angle dependence, and the field aligned current density due to these electrons resulted in about 0.-00000147 A/sq.m. (Auth.)

K-21676

Okutani, S., Wada, M., Takeuchi, H., Kodama, M., Imai, T., **Observations of auroral-zone precipitating electrons by antarctic rockets,** *Antarctic record,* Jan. 1979 No.63, p.29-41, In Japanese with English summary. 5 refs.

During one year from January 1976, five sounding rockets carrying the electron detector were launched from Syowa Station, Antarctica. One of them was made on a geomagnetically quiet time, while the others all encountered a certain degree of auroral disturbance. The rocket-borne detector consists of both proportional and plastic scintillation counters and can measure high energy electrons greater then 40 keV. Preliminary results thereby obtained are presented, giving an account of characteristics of vertical profile and pitch angle distribution of energetic electrons during auroral disturbances, compared with those for the quiet time. (Auth.)

K-21677

Kawashima, N., Sasaki, S., Kaneko, O., **Auroral simulation experiments with a high power electron beam,** *Antarctic record,* Jan. 1979 No.63, p.42-52, In Japanese with English summary. 8 refs.

Laboratory and space experiments using a high energy electron beam are reported. Excitation of auroral lines and strong VLF and HF emissions are observed. It is hoped that these active experiments will be carried out by rockets in Antarctica to understand auroral phenomena. (Auth.)

K-21678

Wada, M., Okutani, S., Imai, T., Takeuchi, H., Kodama, M., **Data processing for auroral electron analysis,** *Antarctic record,* Jan. 1979 No.63, p.53-59, In Japanese with English summary. 2 refs.

By means of semi-analog recording of the magnetic tape which was obtained by antarctic rocket experiments in 1967-77, details of data processing for deducing the pitch angle distribution of auroral electrons from the observed electron counting rates are described. In this way, a viewing direction of the detector is taken into account against both the spinning and precession motions of the rocket. (Auth.)

K-21679

Kamide, Y., **Recent progress in observational studies of electric fields and currents in the polar ionosphere: a review,** *Antarctic record,* Jan. 1979 No.63, p.61-231, Refs. p.197-231.

The recent development of several new observational techniques has contributed significantly to understanding the characteristics of electric fields and currents in the high-latitude ionosphere as well as those of auroral particle precipitation and auroral distribution. This paper attempts to review the main results of several years of research in these diverse fields in order to construct a plausible working model that is consistent with the basic physical requirements. Various ionospheric processes, including substorm variations, are discussed, with special emphasis on field-aligned currents. The review also examines recent efforts to synthesize the vast amount of observations of large-scale auroras, electric and magnetic fields, and currents in the ionosphere and magnetosphere, and concludes with a list of several questions to which satisfactory agreement has not been reached. (Auth.)

K-21680

Fujii, R., Iijima, T., **Correlation between cusp field-aligned currents and interplanetary magnetic field,** *Antarctic record,* Jan. 1979 No.63, p.232-251, 11 refs.

From an analysis of vector magnetometer data of more than 200 passes of TRIAD recorded at McMurdo during the winter of 1974, the principal characteristics of the cusp field-aligned currents (FAC) in the midday south polar region are determined. Cusp type FAC's exist in the midday polar region that is separate from the region 1 (and 2) FAC regimes. The demarcation line between the pre-noon type and the post-noon type cusp FAC's is controlled well by the polarity of IMF By. There is a linear correlation between the intensity of the

cusp FAC and the negative IMF Bz component. No clear relation was found between the cusp FAC intensity and the positive IMF Bz component. (Auth. mod.)

K-21681
Ogawa, T., Morita, M., Fukunishi, H., Matsuo, T., Yoshino, T., **Measurements of ionospheric electric fields with antarctic sounding rockets S-210JA-24 and 25,** *Antarctic record*, Jan. 1979 No.63, p.252-275, 2 refs. In Japanese with English summary.

DC and AC (8-110 Hz) electric fields were observed in the auroral ionosphere up to 120 km with spherical double probes on board the sounding rockets S-210JA-24 and 25 at Syowa Station. The rockets passed close to auroras. The DC electric fields observed during substorms at magnetic midnight are composed of the height-independent electric field of about 20mV/m and the local electric field of up to 30 mV/m. Strong AC noises were observed in the limited altitude range of 96-112 km during both the ascent and the descent. The noise frequencies varied with altitude and ranged between 20 and higher than 110 Hz. The noises appeared in the direction perpendicular to the DC electric field. These characteristics suggest that the noises might be generated by plasma instability in the ionospheric current layer. (Auth. mod.)

K-21682
Ogawa, T., Kodama, M., Fukunishi, H., Matsuo, T., Yoshino, T., **Measurements of electric field and auroral X-rays with antarctic balloons,** *Antarctic record*, Jan. 1979 No.63, p.276-290, In Japanese with English summary. Refs. p.288-290.

A plastic balloon of 5000 cu m was launched at Syowa Station at 1138 UT on December 12, 1976, and the horizontal electric field and auroral X-rays were simultaneously measured for about 10 hours in the stratosphere. During the flight a weak geomagnetic substorm occurred, corresponding to the eastward electrojet in the afternoon side of the auroral zone, and the electric field increased from 10 mV/m to 40 mV/m. There were good correspondences between the southward electric field and geomagnetic horizontal component and between the westward electric field and declination. Observed auroral X-rays were homogeneous throughout the sky and of diffuse type. The X-rays were enhanced three times during the substorm. The height-integrated conductivities were calculated from the observed electric field and the geomagnetic variations at Syowa Station, showing values of 1-10 mho. The Hall conductivity increased during the substorm. (Auth. mod.)

K-21683
Tohyama, F., Aoyama, I., Komatsu, S., **Magnetic field observations with sounding rockets,** *Antarctic record*, Jan. 1979 No.63, p.291-297, 2 refs.

Detailed observations of geomagnetic field variation in and near the aurora were provided by the new three-axis flux-gate magnetometer experiments acquired with two sounding rockets (S-210JA-24 and 25) launched on Aug. 17 and Sep. 1, 1976, at Syowa Station. The magnetic differences were obtained by subtracting the extrapolated values of IGRF 1975.0 from the measured values. The experiment with the JA-24 rocket exhibited a pronounced increase in magnitude with increase in height from 110 km to the apogee of the vehicle (118 km). The result of the analysis of rocket attitudes with the geomagnetic aspect sensor are also discussed. (Auth. mod.)

K-21684
Nagai, T., Fukushima, N., **Annual variation of the geomagnetic field in polar regions,** *Antarctic record*, Jan. 1979 No.63, p.298-310, 10 refs.

The annual variations of the geomagnetic field H and Z are studied by means of the data from worldwide stations during 1957-1964. The amplitudes and phases of the annual variations change smoothly with geomagnetic latitude, except for data within the auroral zones. The amplitudes of the annual variations of H and Z in the polar regions show a clear dependence on the solar cycle in approximate proportion to the geomagnetic activity rather than to the sunspot number. The modulation of H is different from that of Z in some years. The amplitudes of the annual variations of H and Z in polar regions depend clearly on the north-south component of interplanetary magnetic field. (Auth. mod.)

K-21688
Troitskaia, V.A., **Results of studying electromagnetic phenomena in the Antarctic** [Rezul'taty issledovaniĭ kompleksa elektromagnitnykh iavleniĭ v Antarktike], *Antarktika: doklady komissii*, 1978 No.17, p.27-42, In Russian. 2 refs.

After an introduction reviewing current concepts of magnetospheric structure and dynamics, basic findings of investigations into various disciplines relating to the geomagnetic field and ground currents, aurora, ionospheric radio propagation, and cosmic rays are briefly outlined. New physical phenomena have been discovered in studying this complex of subjects. Special emphasis is laid on the asymmetry in electromagnetic flow processes in the Arctic and Antarctic. Approaches for using available knowledge to study the lower atmosphere and to predict magnetospheric disturbances and radio propagation are suggested. To conclude, the author offers proposals for further research into electromagnetic disciplines.

K-21689
Men'shutina, I.N., **Possible classification of photometric records in the polar cap** [O vozmozhnoĭ klassifikatsii fotometricheskikh zapiseĭ v poliarnoĭ shapke], *Antarktika: doklady komissii*, 1978 No.17, p.43-46, In Russian. 12 refs.

Long-period auroral variations were studied from photometric data gathered at Mirnyy. There are at least three types with periods of more than 2 minutes. Different UT (LT) variation, depending on the AE-index, are identified.

K-21690
Men'shutina, I.N., **Behavior of the plasma layer during breakup according to Mirnyy Station data** [Povedenie plazmennogo sloia vo vremia break-up'a po dannym stantsii Mirnyĭ], *Antarktika: doklady komissii*, 1978 No.17, p.47-50, In Russian. 15 refs.

Low frequency geomagnetic field pulsations, recorded at high-latitude stations, are proposed as a kind of "instrument" for the study of changes in the thickness of the plasma layer. It is hypothesized that the moment of changeover from thinning to thickening of the layer can be equated with the minimal pulsation period. Data recorded at Mirnyy and Dickson Stations were used to calculate the time lapse between the development of breakup at the zonal station and initiation of plasma layer thickening at L equals 19. It may be possible to diagnose the plasma layer with low-frequency pulsations, and a series of problems possibly amenable to solution in this way are proposed.

K-21692
Zaĭtseva, N.A., Shliakhov, V.I., **Results of several years of study of low-frequency radiation in the antarctic atmosphere** [Rezul'taty mnogoletnikh issledovaniĭ dlinnovolnovoĭ radiatsii v atmosfere Antarktidy], *Antarktika: doklady komissii*, 1978 No.17, p.75-81, In Russian. 6 refs.

The radiation regime in polar regions has unique characteristics. During the polar night there is no solar radiation and around the clock

only low-frequency atmospheric radiation is present. Actinometric soundings were carried out by airplane around Mirnyy from 1958 to 1962 and by radiosonde at Molodezhnaya (1966-1968) and Bellingshausen (1969-1972). Data on vertical distribution of incoming and outgoing radiational heat for the different seasons and under various atmospheric conditions are analyzed. Radiation profile characteristics are determined primarily by the low temperature of the underlying surface and by the extreme clarity of the atmosphere. Radiation patterns differ greatly between the coastal and continental stations, and this is reflected in free atmosphere temperatures at coastal stations.

K-21694

Gusev, A.M., **Circulation features of the Antarctic atmosphere and the Southern Ocean** [Osobennosti tsirkuliatsii atmosfery Antarktiki i vod IUzhnogo okeana], *Antarktika; doklady komissii*, 1978 No.17, p.96-110, In Russian. 16 refs.

The results of studies of the heat regime and dynamics of the antarctic atmosphere and Southern Ocean waters are discussed. General circulation charts are constructed, and the physical factors determining air and water circulation patterns, cyclones and eddies are outlined. There are two possible explanations for the formation of cyclonic patterns: wave action or convection. A smoothed mathematical model of large-scale horizontal convection due to global rotation is proposed. The number of eddies in a basin is determined by modelling atmospheric and marine conditions around the Antarctic, and the theoretical locations agree well with field observations. Such models must be constructed first for polar areas, since there the symmetry of processes in relation to geographic coordinates simplifies the issue. Thus Antarctica can serve as a natural model for analogous but more complex situations in the northern hemisphere.

K-21709

Mansurov, S.M., Mansurova, L.G., Okulova, L.S., **Catalog of polarity determinations for sectors of the interplanetary magnetic field from 1975 to 1976** [Katalog opredeleniĭ poliarnosti sektorov mezhplanetnogo magnitnogo polia za period 1975-1976 gg.], *Antarktika: doklady komissii*, 1978 No.17, p.268-270, In Russian. 7 refs.

Determinations of predominant polarity of the interplanetary magnetic field sectors from 1975 to 1976, recorded daily and categorized by the type of geomagnetic field variations at polar stations, are summarized in charts. A brief description of the sector structure of the IMF is included.

K-21716

Piggott, W.R., **Advantages of the Antarctic for ionospheric research,** Dynamical and chemical coupling, ed. by B. Grandal and J.A. Holtet, Dordrecht, The Netherlands, D. Reidel, 1977, p.367-372, 4 refs.

The author points out the unique characteristics of the antarctic region that makes it so valuable as a source of atmospheric and geomagnetic data. He urges workers in lower latitudes and in the northern hemisphere to increase their use of information gathered under such favorable conditions; he reminds them that, with the advent of inexpensive and wide-ranging satellite data programs, the old objection that antarctic data was collected at an insufficient number of points is no longer valid.

See also:
A-20272 A-21360 A-21363 A-21364 A-21365 E-19916
E-19929 E-19930 E-21129 F-19679 F-20473 G-19951 G-20790
I-19698 I-19787 J-20991 L-20351 L-20675

L. TERRESTRIAL PHYSICS

L-19267

Brett, C.P., **Seismicity of the South Sandwich Islands region,** *Geophysical journal,* Nov. 1977 51(2), p.453-464, 15 refs.

South Sandwich Islands earthquakes have been relocated for the period 1964-mid 1974. Travel-times modified by station corrections, computed by applying the joint epicentre determination method (JED) to the major events, have been used. This results in the greatly improved definition of the active zone arising from the subduction of the South American plate beneath the young Sandwich plate. The detailed features of the seismicity are interpreted in terms of the tectonics of the area, and new evidence is presented which suggests that the penetration depth of the subducted slab may be greater than previously recognized. (Auth.)

L-19349

Webb, E.N., **Location of the South Magnetic Pole,** *Polar record,* Sep. 1977 18(117), p.610-611.

Throughout the 19th century the general position of the South Magnetic Pole was estimated from observations of declination by means of the compasses of occasional ships sailing off the pack ice fringing the Antarctic coast, from shipboard dip determinations, and from the calculations of Mawson and others during the longest unsupported manhauling sledge journey in history with Shackleton's 1907-09 *Nimrod* expedition. The extreme point reached by the party has been used ever since as the South Magnetic Pole of that epoch. A wealth of magnetic data obtained during Mawson's Australasian Antarctic Expedition of 1911-14 places the South Magnetic Pole at 71 deg 10'S 150 deg 45'E in Dec. 1912, a point some 130 km northwest of the probable 1909 location. The 1912 positions should be more widely known as the scientifically accurate fix for that period.

L-19433

Thomson, R.B., **Discovery of fossils at the South Pole supports the Gondwanaland hypothesis** [Fossilienfunde am Südpol stützen die Gondwanaland-Hypothese], *Umschau,* June 15, 1967 No.12, p.395, In German.

Stratigraphic and paleontologic studies carried out by New Zealand Antarctic expeditions from 1957 to 1965 are discussed. The new fossils found in limestone in the area of Buckley and Darwin Nunataks, located 480 km from the South Pole, support the Gondwanaland theory.

L-19436

U.S. Coast and Geodetic Survey, **Antarctic seismological bulletin, Jan.-Sep. 1965, Apr. 1966-Apr. 1972,** Washington, 1965-1972, Various paging. MSI-289A, 292A, 295A, 304A, 307A, 310A, 313A, 316A, 319A, 322A, 325A, 328A, 331A, 334A, 337A, 343A, 346A 349A, 352A, 355A, 358A, 361A, 364A, 367A, 370A, 373A, 374A, 375A, 376A.

DCGS 515.22 C65a

The Antarctic seismological bulletin is a quarterly publication containing tabulated phase readings received by radio from seismological stations maintained in the Antarctic by Australia, Chile, France, Japan, New Zealand, South Africa, the USSR, U.K., and U.S. In addition to phase readings the data include station and instrumental constants. The bulletin became a monthly publication following the Jan. 1972 issue.

L-19486

U.S. Coast and Geodetic Survey, **Magnetograms and hourly values: Byrd Station, Antarctica,** Washington, 1964, 146p.

This is a collection of tables and actual magnetograms recorded at Byrd Station in 1961. Charts include: absolute instruments and corrections; orientation results; approx. scale values of variometers; declination; horizontal intensity base-line values and scale values; vertical intensity base-line values; monthly and annual means; summary of annual means; 3-hr-range indices; averages for successive hourly periods beginning at midnight, UT; and the magnetograms themselves. Data collected in subsequent years were not issued in book form but are available on microfilm from the Germagnetic Services Section, U.S. Geological Survey, Boulder, Colorado.

L-19498

Gainanov, A.G., Koriakin, E.D., **Regional gravity anomalies in the Atlantic Ocean** [Regional'nye anomalii sily tiazhesti Atlanticheskogo okeana], *Morskie gravimetricheskie issledovaniia,* 1975 No.8, p.169-179, In Russian with English summary. 34 refs.

Schematic maps of the average gravity anomalies on 1x1 degree squares are shown. Regions of free air and Bouguer anomalies are described. Marked free-air anomalies occur in the Scotia Sea and the Drake Passage. Bouguer anomalies are found in the Drake Passage, but diminish toward the east, approaching zero by the Falkland Island region.

L-19513

Rabinowitz, P.D., Cande, S.C., La Brecque, J.L., **Falkland escarpment and Agulhas fracture zone: the boundary between oceanic and continental basement at conjugate continental margins,** *Academia brasileira de ciencias, Rio de Janeiro. Anais,* 1976 Vol.48, p.241-251, 26 refs.

Studies of marine gravity and magnetic anomalies have been used to determine a model for the boundary between oceanic and continental basement along the Agulhas fracture zone and the Falkland escarpment. The Agulhas fracture zone, where bounded to the north by the African continent, is defined by a nearly linear high amplitude positive magnetic anomaly. The conjugate segment at the base of the Falkland escarpment is characterized by nearly linear negative magnetic anomalies. In both areas isostatic gravity anomalies are coincident with the linear negative magnetic anomalies. Magnetic quiet zones are observed landward of these magnetic anomalies. The Agulhas fracture zone and Falkland escarpment are interpreted as separating oceanic from continental basement in these regions. Magnetic edge effect computations are in agreement with this interpretation. (Auth.)

L-19523

Yoshimura, A., Abe, Y., Naruse, R., **Distribution of three geomagnetic components over Mizuho Plateau, Antarctica,** *Antarctic record,* Nov. 1977 No.60, p.38-46, 7 refs.

Distributional maps of declination, inclination and total force of geomagnetism reduced to the epoch of 1970.0 are presented on the basis of the data obtained by the oversnow traverses during the period from 1968 to 1974 over Mizuho Plateau, East Antarctica. One of the local magnetic anomalies appears in a region to the southwest of Sandercock Nunataks and another between Syowa Station and

Mizuho Camp. They coincide well with the regions where large gravity anomalies occur. (Auth.)

L-19532

U.S. Coast and Geodetic Survey, **Antarctic seismological bulletin,** Washington, D.C., var. p., Apr. 1965-Feb. 1972 (incomplete).

This quarterly bulletin, which ceased publication in 1972, consists entirely of charts presenting seismogram data from an international network of stations in the Antarctic. Each number contains a table listing the stations, their positions, foundation and elevation, and the instruments and components in use at each.

L-19549

Renner, R.G.B., **Aeromagnetic survey over southern Graham Land: a preliminary report,** *British Antarctic Survey. Bulletin,* Nov. 1976 No.43, p.59-61.

An aeromagnetic survey was flown over southern Graham Land in the summer of 1973-74. Equipment and navigation methods are summarized and completed flight lines shown. (Auth.)

L-19572

Sytinskiĭ, A.D., **On hydrometeorological conditions of microseisms generation,** *Pure and applied geophysics,* 1973 Vol.103, p.296-304, 8 refs.

The data of the seismic stations Mirnyy and Pulkovo have shown that microseisms are essentially caused by coastal effect of sea disturbance caused by stormy winds directed towards the coast. Amplitude of microseisms in this case grows in step with the square of wind velocity and is inversely proportional to the distance of the source. (Auth.)

L-19651

England, A.W., Nelson, W.H., **Geophysical studies of the Dufek intrusion, Pensacola Mountains, Antarctica, 1976-1977,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.93-94, 8 refs.

Four geophysical traverses were carried out to locate the ice-covered margins of the Dufek intrusion and to estimate the thickness of the pluton to the north and west of the Dufek Massif. The massif is described and the measurement techniques are outlined. Preliminary analysis of the data shows that the margin of the Dufek intrusion is reflected both in the topography of the ice-rock interface and in a Bouguer gravity anomaly. Along traverse 1, the margin is about 10 km from the base camp across Jaburg Glacier. Along traverses 2 and 4, the margin is along the northern flanks of the Brown Nunataks rather than 10 km farther toward the Ronne Ice Shelf. Observed ice thicknesses are 300 m at the base camp, 200 m on traverse 2 near Hannah Peak, as much as 600 m toward the northern extreme of traverse 2, and 1.1 km in Jaburg Glacier. Analyses are underway to estimate thickness of the Dufek under Enchanted Valley and to utilize the gravity gradient data.

L-19673

Slichter, L.B., **Search at South Pole for the pendulum mode of the earth's inner core,** *Antarctic journal of the United States,* Oct. 1977 12(4), p.124-125.

Two 20-cm diam holes drilled to depths of 3.3 and 30 m are being used to monitor the tilt behavior of the ice, with the hope of expanding the measurements of gravity variations to include all three components of the gravity vector. Free mode power spectra of earthquakes observed in the Philippines, at UCLA, and at the South Pole are shown. The superiority of the South Pole observations is demonstrated.

L-19802

Peirce, J.W., **Northward motion of India since the Late Cretaceous,** *Geophysical journal,* Feb. 1978 52(2), p.277-311, Refs. p.309-311.

Paleomagnetic data are presented from the sediments and basalts at DSDP sites 213, 214, 215, 216, and 217 on or near the Ninetyeast Ridge in the eastern Indian Ocean. The paleolatitudes confirm that the ridge is attached to the Indian plate and that both have moved rapidly northwards since the Late Cretaceous. The Indian plate moved northwards with respect to the South Pole at an average rate of 14.9 cm/yr from 70 Myr ago until about 40 Myr ago when it slowed to its present rate of 5.2 cm/yr. Basement paleolatitudes on the Ninetyeast Ridge indicate that its volcanic source was approximately fixed in latitude near 50 S, supporting the concept that the ridge is the trace of the Kerguelen hotspot on the northward moving Indian plate. The existence of a mirror ridge on the Antarctic plate and the very shallow depths of basement formation on the ridge suggest that the Indian/Antarctic spreading center must have remained near the hotspot from 80 to 40 Myr in spite of one-limb spreading rates of up to 12 cm/yr. This is unexpected in view of the apparently small amount of motion of the Antarctic plate during this time. It is suggested that Antarctica was held nearly fixed by the geometry of other plate motions, and therefore the Kerguelen hotspot caused asymmetric accretion of new plate material at the southwestern end of the Ninetyeast Ridge. (Auth. mod.)

L-19823

Abe, Y., Yoshimura, A., Naruse, R., **Gravity anomalies and bedrock relief in Mizuho Plateau,** *Tokyo. National Institute of Polar Research. Memoirs. Special issue,* Jan. 1978 No.7, p.37-43, 10 refs.

Distributional maps of free-air and Bouguer anomalies of gravity are presented, compiled from the data obtained by the oversnow traverses during the period from 1969 to 1974 over Mizuho Plateau. Considerably large positive free-air anomalies were found in the region between Showa Station and Mizuho Camp, while large negative anomalies were found to the southwest of Sandercock Nunataks. The existence of a large-scale bedrock rise is suggested in the former region, whereas a large-scale subglacial trough is inferred in the latter. The distribution of Bouguer anomalies also showed irregular patterns in these regions. The value of the Bouguer anomaly decreases in general with the increase of the surface elevation at a rate of about -40 mgal per 1000 m. (Auth. mod.)

L-19854

Voronov, P.S., **Antarctic neotectonics and its mapping** [Neotektonika Antarktidy i ee kartograficheskoe otobrazhenie], Noveĭshie dvizheniia, vulkanizm i zemletriaseniia materikov i dna okeanov (Recent movements, volcanism and seisms on continents and the ocean floor), Moscow, Nauka, 1969, p.183-185, In Russian with English summary.

DLC QE500.N68

The main features of neotectonic crustal movements in Antarctica are: 1) elevated ancient beach remnants; 2) highly elevated block mountains in the periphery of East Antarctica; 3) deep and extensive inland depressions in the bed of ice shield. The main agents of neotectonic crustal movements are routine endogenic effects, glacio-isostatic forces and rotational strains in the Earth's crust. A scarcity of neotectonic data from Antarctica provides a sketch neotectonic map to be compiled only in general outline for the area under consideration. Within Antarctica the ice is known as a common rock. It is therefore reasonable to consider the cryotectonic processes developed there as being part of the neotectonic ones with respect to a large scale of the inland ice. The cryotectonics studied by glaciologists may be considered as a distinct branch of neotectonics. (Auth.)

L-19855
Ushakov, S.A., Krass, M.S., **Crust and upper mantle dynamics in regions of continental glaciation** [Dinamika kory i verkhneĭ mantii v oblastiakh materikovykh oledeneniĭ], Noveĭshie dvizheniia, vulkanizm i zemletriaseniia materikov i dna okeanov (Recent movements, volcanism and seisms on continents and the ocean floor), Moscow, Nauka, 1969, p.185-194, In Russian with English summary. 23 refs.

DLC QE500.N68

The flowing of upper mantle material takes place in the comparatively thin (50-200 km) layer of the asthenosphere, during development of the regions of continental glaciation. In the case of rapid increase of glacial load a ring of marginal rises forms. If the increase is gradual, the amplitude of rise is only several meters, or a few tens of meters at the most. (Auth.)

L-19871
Vogt, P.R., **Long-wavelength gravity anomalies and intraplate seismicity,** *Earth and planetary science letters,* Jan. 1978 37(3), p.465-475, 45 refs.

Anomalously high mid-plate and Mid-Oceanic Ridge (MOR) seismicity apparently characterizes the flanks of the regional free-air gravity and topographic high roughly centered on the postulated Iceland hot spot; anomalously high mid-plate seismicity also occurs around the deep free-air gravity low centered just south of India. Roughly equidimensional highs occur over shallow parts of the MOR, such as Iceland, the Azores, Amsterdam, St. Paul, Tristan da Cunha, and Prince Edward Island. Extensive gravity lows occurring over Antarctica and north of the Himalayas remain unexplained. Although the correlation between gravity and seismicity is still somewhat inconclusive, it seems to suggest active asthenosphere flow associated with the regional gravity anomalies. Added to other stresses in the plate, the stress transmitted to the plate by this flow would encourage its fracture. (Auth. mod.)

L-19879
Brooks, C., Hart, S.R., **Rb-Sr mantle isochrons and variations in the chemistry of Gondwanaland's lithosphere,** *Nature,* Jan. 19, 1978 271(5642), p.220-223, 28 refs.

Isotopic data for the Mesozoic tholeiites of Gondwanaland are used to appraise the question of primary vs contaminated chemistry in mantle-derived rocks and also the possibility that plateau-type tholeiites contain information on the local and regional heterogeneities in the Earth's mantle. A crustal contamination hypothesis is discarded. The evidence suggests that a case can be made for the existence of gross heterogeneities in the underlying lithosphere manifest on all scales from local to continental.

L-19910
Solomon, S.C., Mattaboni, P.J., Hester, R.L., **Microseismicity near the Indian Ocean triple junction,** *Geophysical research letters,* Dec. 1977 4(12), p.597-600, 23 refs.

The African, Indian and Antarctic plates meet at a triple junction in the central Indian Ocean near 25S, 70E. During Mar. 1976 a three-component ocean bottom seismometer was dropped for two weeks near the RRR triple junction to monitor microseismicity. The seismometer, using a digital event recorder scheme, recorded 38 earthquakes, about half of which were local events within 5 to 40 km epicentral distance. These near events had nominal local magnitudes of 0 to 1.5, seismic moments of 10 exponent 17 to almost 10 exponent 19 dyne-cm, and S wave corner frequencies of 15 to 25 Hz. The moment versus fault dimension relation for these earthquakes scales as for larger events on other spreading centers, suggesting similar stress drops. Thus any thermal or mechanical differences between the triple junction and other ridge crest and transform systems are not reflected in the character of locally generated earthquakes. (Auth. mod.)

L-20013
Huestis, S.P., Parker, R.L., **Bounding the thickness of the oceanic magnetized layer,** *Journal of geophysical research,* Nov. 10, 1977 82(33), p.5293-5303, 30 refs.

A theory is presented for placing a lower bound on the thickness of the oceanic magnetized layer using magnetic anomaly observations and estimates of the intensity of magnetization; the theory makes only a minimum number of assumptions regarding the spatial distribution of the magnetization. The principle of the method is based upon the fact that thin layers imply high magnetizations. The method is applied to two sets of near-bottom magnetic profiles, one on the Galápagos Spreading Center at 86W and the other set on the Pacific-Antarctic Ridge at 51S. In the first area it is concluded that the magnetic layer must be at least 450 m thick, and in the other a crossing of the Jaramillo event indicates that the magnetic layer is probably more than 1000 m in thickness. (Auth. mod.)

L-20014
Davey, F.J., **Marine seismic measurements in the New Zealand region,** *New Zealand journal of geology and geophysics,* 1977 20(4), p.719-777, Refs. p.773-777.

Seismic profiler data recorded by USNS *Eltanin* in the vicinity of New Zealand are used to delineate the major features of the sediment distribution in the region, particularly on the marginal plateaus. Sonobuoy data have given basement depths in some areas where the sediment cover is too thick to be profiled and also information on sediment velocities, enabling estimates to be made of sediment thicknesses. A strong reflector, probably Late Cretaceous-Early Tertiary in age, occurs over a large portion of the survey area. Flat-lying sediments of Tertiary age, thicker than 2 km, occur in the morphological depressions of New Caledonia Basin, southern Hikurangi Trench, and Solander Trough. Bounty Trough, however, has a relatively thin sediment cover. Deep sedimentary troughs, also containing at least 2 km of sediments, exist at the south-west of Campbell Plateau, along the southern margin of Pukaki Rise, and along the eastern margin of South Island from south of Banks Peninsula to Snares Depression. (Auth.)

L-20062
Markl, R.G., **Basement morphology and rift geometry near the former junction of India, Australia, and Antarctica,** *Earth and planetary science letters,* Apr. 1978 39(2), p.211-225, 53 refs.

Magnetic and gravity anomaly data, together with features of the basement topography presented here show that the continental margin of western Australia, including the Naturaliste plateau, was shaped by NE-SW-trending rift segments offset by nearly orthogonal transform faults. A steep landward gradient of the isostatic gravity field and a lineated magnetic anomaly which occur together at the continental slope are interpreted as marking the ocean-continent boundary of the rifted margin off Perth and the sheared margin between Perth and the Wallaby plateaus. Anomalies diagnostic of the ocean-continent boundary are not observed at the margins of the Naturaliste plateau; the geometry of the rift zone here is adduced from the disposition of magnetic lineations, fracture zones, and basement features. A geophysical survey of the Naturaliste fracture zone shows it to be a continuous basement trough extending from the Diamantina fracture zone 800 km northwest to Dirck Hartog ridge. Similar basement troughs west of and orthogonal to the fracture zone imply that the region west/southwest of the Naturaliste plateau was, like the region north of it, formerly occupied by Greater India. Marine magnetic anomaly and basement trends suggest that the oceanic crust between the plateau and Diamantina fracture zone could be substantially older

than Paleocene, heretofore the oldest crust identified between Australia and Antarctica. (Auth.)

L-20085

Kaminuma, K., Mizoue, M., **Modes of gravity anomaly distributions in relation to the crustal structure of the antarctic continent,** *Antarctic record,* Mar. 1978 No.61, p.32-39, 9 refs.

An analytical method is introduced in applying gravity data to the study of crustal structure by using a reduced gravity anomaly when the thickness of the ice sheet is unknown. Gravity data analysis leads to the conclusion that the crust of the Antarctic Continent is in a regional isostatic equilibrium common to the other continental regions on the earth, though the thickness of the crust in West Antarctica is relatively thinner than that in East Antarctica. (Auth. mod.)

L-20092

Kaminuma, K., **Seismological bulletin of Syowa Station, Antarctica, 1976,** *Japanese Antarctic Research Expedition. JARE data reports,* Feb. 1978 No.43, 53p., 9 refs.

Seismic data interpreted from seismograms of HES and long-period seismographs at Showa Station in 1976 are presented. The data include date, identified phase with its sharpness indication and ground motion direction, arrival time in G.M.T., period of phase in seconds, trace amplitude in millimeters, and instrumental constants of HES and long-period seismographs.

L-20217

Embleton, B.J.J., Schmidt, P.W., **Revised palaeomagnetic data for the Australian Mesozoic and a synthesis of late Palaeozoic-Mesozoic results for Gondwanaland,** *Tectonophysics,* Mar. 23, 1977 38(3/4), p.355-364, 51 refs.

Revised palaeomagnetic data for the Mesozoic of Australia confirm the unity of Gondwanaland until the mid-Jurassic. By combining palaeomagnetic poles from all the Gondwana continents, an apparent polar shift is recognized for the late Palaeozoic, Triassic and Jurassic. (Auth.)

L-20266

Manzoni, M., Nanni, T., **Paleomagnetism of Ordovician lamprophyres from Taylor Valley, Victoria Land, Antarctica,** *Pure and applied geophysics,* 1977 115(4), p.961-977, 29 refs.

Paleomagnetic study of specimens from four lamprophyric dykes on the Kukri Hills, Taylor Valley has yielded a primary mean direction of magnetization of D=222.6 and I=+0.6 with alpha 95=10.9 deg after AF cleaning. The magnetization of five other dykes and of the amphibolitic basement was either unstable or not fully reliable. The corresponding pole position lies at 9.3S and 26.7E and confirms the previous results from Lower Ordovician rocks from distant areas of East Antarctica. A lower Ordovician mean pole position recalculated from valid data lies at 17S,21E. (Auth.)

L-20278

Barker, P.F., Griffiths, D.H., **Towards a more certain reconstruction of Gondwanaland,** *Royal Society of London. Philosophical transactions,* May 26, 1977 279B(963), p.143-159, Refs. p.157-159.

In the absence of identified magnetic anomalies in the southernmost Atlantic and Indian Oceans, palaeomagnetic data provide the most precise test of the initial relative positions of East and West Gondwanaland, with an uncertainty of about 10 deg. Two models are presented which lie within this uncertainty, but which have very different consequences for the initial position of the Antarctic Peninsula and the evolution of the Weddell Sea. Consideration of these models and their evolution shows that, in turn, a combination of mid-Jurassic palaeomagnetic data from the Peninsula and knowledge of Weddell Sea magnetic lineations should indicate the initial relative positions of East and West Gondwanaland. (Auth.)

L-20286

Lapointe, P.L., Roy, J.L., Morris, W.A., **What happened to the high-latitude palaeomagnetic poles,** *Nature,* June 22, 1978 273(5664), p.655-657, 12 refs.

The paleomagnetic record, as presently known, is deficient in high latitude poles. Difficulty in finding high latitude poles could arise from one or more of the following causes: inadequate (and biased) sampling: tectonic effect: and interpretation of high latitude poles. This analysis of high latitude world Precambrian and lower Paleozoic paleomagnetic pole distribution, including Antarctic poles, shows a lower percentage of high latitude poles from higher latitude continents than from the equatorial continents. The assumption of uniform distribution of poles may be invalid or there may be a sampling bias. It is suggested that the marked difference in % ratio between equatorial and higher latitude continents may be interpreted in terms of the recent remagnetization hypothesis.

L-20315

Hicks, S., **Gravity survey in the Taylor Valley,** *New Zealand antarctic record,* 1978 1(1), p.24-25.

A gravity survey was carried out in Taylor Valley to trace the bedrock profile and obtain thicknesses of the unconsolidated overburden as part of the Dry Valley Drilling Project (DVDP). Three campsites were occupied: Explorers Cove, Lake Fryxell, and Lake Hoare. The campsites and lines surveyed are illustrated.

L-20351

Description of the T.A.A.F. geodesic network, Kerguelen Islands [Instructions concernant le réseau géodésique des T.A.A.F. (Iles Kerguelen)], *France. Ministère d'Etat chargé des départements et territoires d'outre-mer. Terres australes et antarctiques françaises,* Aug.-Sep. 1976 No.68-69, p.55-58, In French.

Charts and data describing the Kerguelen Island satellite station, part of a world-wide network of tracking stations for geodesic satellites, are given. The information supplements data published in Information Bulletin 50-53, 1970.

L-20364

Elston, D.P., Purucker, M.E., Bressler, S.L., Spall, H., **Polarity zonations, magnetic intensities, and the correlation of Miocene and Pliocene DVDP cores, Taylor Valley, Antarctica,** *Dry Valley Drilling Project (DVDP). Bulletin,* May 1978 No.8, p.12-15, 2 refs.

A generalized polarity zonation and correlation for core holes DVDP-8, -10, -11 and -12 in the Taylor Valley is reported. An abrupt increase in magnetic intensity of more than one order of magnitude takes place above 208 m in DVDP-11, above 159 m in DVDP-10, above 153 m in DVDP-8, and above 96 m in DVDP-12. This change occurs in an interval of reversed polarity in all sections examined. The increases in intensity correlate with increases in magnetic susceptibility, reflecting increases in the content of magnetic minerals, and appear to record a single event of regional extent, perhaps a change in climate or a change in provenance of the detrital materials.

L-20382

Lozinskaia, A.M., Donets, E.G., Ipatov, B.G., Khliupin, N.I., Shimaraev, V.N., **Results of aerogravimetric studies in Antarctica** [Rezul'taty opytnykh aerogravimetricheskikh issledovaniĭ v Antarktide], *Geofizicheskie metody razvedki Arktiki,* 1975 No.10, p.147-149, In Russian.

Recent aerial surveys have shown much greater reliability and validity in gravimetric work than had previously been attained. Two factors contributed to the success. First, 2 or 3 gravimeters and 2 or 3 vertical speed gauges were carried on the aircraft. Second, more careful attention was paid to meteorological conditions.

L-20438

Hauyama, H., **Antarctic geomagnetic chart completed** [Nankyoku no zikizu], *Polar news (Kyokuchi)*, July 27, 1978 No.27, p.38-39, In Japanese.

South polar magnetic charts for 1975, illustrating the distribution of the geomagnetic field and its annual variation, have been compiled by the Geographical Survey Institute of Japan at the request of SCAR. Eight charts have been published, using stereographic projection on the scale of 1:15,000,000. The charts present declination, horizontal intensity, inclination, total intensity, north component, east component, vertical intensity and residual total intensity. The geomagnetic south pole in 1975 is calculated to be at 139 deg E and 66 deg S.

L-20624

Levi, S., Banerjee, S.K., Beske-Diehl, S., Moskowitz, B., **Limitations of ophiolite complexes as models for the magnetic layer of the oceanic lithosphere,** *Geophysical research letters,* July 1978 5(6), p.473-476, 39 refs.

It is proposed that only those ophiolite complexes whose magnetic properties and metamorphic grade correspond to comparable stratigraphic units of in-situ oceanic crust should be used for modeling the magnetic properties of the oceanic lithosphere. Because drilling of the igneous oceanic crust by the Deep Sea Drilling Project (DSDP) has penetrated a maximum of 0.6 km, only the upper extrusives (pillow basalts and associated flows) of an ophiolite complex can be used in this direct comparison. Previously published and new data of submarine basalts are used for establishing minimum constraints for the magnetic properties of the extrusive rocks of ophiolite complexes. These criteria were applied to five ophiolite complexes, of which only two, Macquarie I. and Troodo Massif, satisfied all the requirements. The remaining ophiolite complexes were probably subjected to a metamorphic event either during or subsequent to their original emplacement as part of the oceanic lithosphere. (Auth. mod.)

L-20675

Driatskiĭ, V.M., Ignatov, V.S., Kuperov, L.P., Khodzha-Akhmedov, Ch.L., Shirochkov, A.V., **Results and prospects of Soviet geophysical research in the Antarctic** [Itogi i perspektivy sovetskikh geofizicheskikh issledovaniĭ v Antarktike], *Sovetskaia antarkticheskaia ekspeditsiia. Informatsionnyĭ biulleten',* 1978 No.97, p.36-57, In Russian. 121 refs.

This review of Soviet geophysical research is divided into three sections: ionospheric research, geomagnetic research, and studies of radiowaves. Both the theoretical and practical implications of radiowave propagation and interference are discussed.

L-20682

International Symposium on Earth Tides, 7th, Sopron, Hungary, 1973, Szádeczky-Kardoss, G., ed, **Proceedings of the 7th International Symposium on Earth Tides,** Budapest, Akadémiai Kiadó, 1976, 796p., In English, German and French. Refs. passim.

DLC QC809.E2.I58 1973

The 7th Symposium was held for the purpose of discussing gravity tides, including those in Antarctica. The agenda included the following topics: international earth tide observations, theory, instrumental problems, mathematical problems, environmental effects, and the work of individual observatories. For selected papers see L-20683 through L-20686.

L-20683

Schneider, M.M., **First observations of gravity tides in the central part of Antarctica** [Erste Beobachtungen der Schweregezeiten in der zentralen Antarktis], International Symposium on Earth Tides, 7th, Sopron, Hungary, 1973. Proceedings. Edited by G. Szádeczky-Kardoss, Budapest, Akadémiai Kiadó, 1976, p.129-135, In German. 14 refs. For another version see 6L-10527.

Observations of tidal variation of gravity at Vostok Station, carried out in 1969, show that preliminary mean harmonic constants of the O1 and K1 waves, were near 1.20. The low temperature and electrostatic effects in the vicinity produced peculiarities in the experimental work.

L-20684

Schneider, M.M., Simon, D., **Influence of atmospheric pressure and air temperature fluctuations on tidal observations of gravity in Central Antarctica,** International Symposium on Earth Tides, 7th, Sopron, Hungary, 1973. Proceedings. Edited by G. Szádeczky-Kardoss, Budapest, Akadémiai Kiadó, 1976, p.577-594, 11 refs.

Records obtained with gravimeter Gs 11 No.140 at Vostok Station from July to Dec. 1969 were evaluated by different methods of harmonic analysis. An attempt is made to prove the existence of a meteorological effect in the gravity tides observed at Vostok Station. The correlation of the tidal and meteorological data is investigated by means of drift curves.

L-20685

Bonatz, M., **First results of gravimetric earth-tide measurements at Kerguelen Island in the South Indian Ocean,** International Symposium on Earth Tides, 7th, Sopron, Hungary, 1973. Proceedings. Edited by G. Szádeczky-Kardoss, Budapest, Akadémiai Kiadó, 1976, p.643-645, 6 refs.

Measurements of gravity tides in the Kerguelen Islands were performed with the Askania gravimeter GS 15 No.206. The results of the first three sets of data from Jan. 5 to May 16, 1973, are given. These recordings are of particular interest because of the position of the small island.

L-20686

Schneider, M.M., **Measuring gravity relationship between Mirnyy and Vostok (Antarctica)** [Schwereanschlussmessung Mirny-Wostok (Antarktika)], International Symposium on Earth Tides, 7th, Sopron, Hungary, 1973. Proceedings. Edited by G. Szádeczky-Kardoss, Budapest, Akadémiai Kiadó, 1976, p.763-765, In German. 5 refs.

Data on gravity, measured with Askania gravimeter Gs 11 No.140 in 1969-1970 at Mirnyy Station, were compared to those at Vostok Station. The results show that gravity at Mirnyy reached 982,407.4 mGal, while gravity at Vostok was only 981,908.9 mGal. The difference in gravity between the two station amounts to 498.5 mGal.

L-20687

Bonatz, M., **Gravimetric earth tide station Kerguelen (Indian Ocean)—Results of the first measurement period January-May 1973** [Gravimetrische Erdgezeitenstation Kerguelen (Indischer Ozean); Ergebnisse des ersten Registrierzeitraumes Januar bis Mai 1973], *Bonn. Universität. Institut für theoretische Geodäsie. Mitteilungen,* 1973 No.20, 17p., In German with English summary. 5 refs.

A gravimetric earth tide station was established on the Kerguelen Islands at Port-aux-Français in Dec. 1972 and operated for one year. The location of the Kerguelen Islands provides a good opportunity for the study of the loading effect of oceanic tides. The recordings were computerized and analyzed. Results of the computations are tabulated.

L-20688

Morel, P., Irving, E., **Tentative paleocontinental maps for the Early Phanerozoic and Proterozoic,** *Journal of geology,* Sep. 1978 86(5), p.535-561, 59 refs.

The maps are intended as an attempt to assemble the Early Phanerozoic paleomagnetic results in map-form so that they can be compared with the geological evidence. Relative longitude is estimated by minimizing relative motions among the continents. This approach also provides a useful means of discussing the "polarity problem" in constructing polar wander curves. Six stages are tentatively recognized: (1) at the end of the Precambrian, the continental crust is assembled into a supercontinent with the Siberian Shield in the southern hemisphere adjacent to eastern Gondwana; (2) the supercontinent is fragmented in the Early Cambrian; (3) it is reassembled in the Late Silurian (Caledonian Orogeny); (4) undergoes internal adjustments in the Devonian by the sinistral rotation of Laurasia relative to Gondwana (Acadian Orogeny); (5) it breaks-up again in the Late Devonian; and (6) is reassembled in the Middle Carboniferous (Hercynian-Appalachian Orogeny). This succession of stages is regarded as the surface global expression of the Wilson Cycle. Experimental maps for the Late Proterozoic indicate that during the Grenvillian Orogeny there was dextral shear between Gondwana and Laurentia. It is stressed that the maps are not unique and have many inadequacies; e.g., they show no expression of the Taconic Orogeny. Paleomagnetic results from Antarctica are used in the analysis.

L-20696

Wellman, P., Tingey, R.J., **Gravity evidence for a major crustal fracture in eastern Antarctica,** *Australia. Bureau of Mineral Resources, Geology and Geophysics. BMR journal of Australian geology and geophysics,* 1976 Vol.1, p.105-108, 12 refs.

Gravity data are presented for 220 sites covering 180,000 sq km in the Prince Charles Mountains area of eastern Antarctica. Bouguer anomalies range from +60 mGal over the Amery Ice Shelf (near sea level) to -120 mGal at altitudes above 2000 m on the Antarctic ice cap. Bouguer anomalies correlate with the mass per unit area above sea level in the relation expected for a region in isostatic equilibrium. Smoothed free air anomalies range from +60 to -60 mGal. North-south trending anomalies over the Lambert Glacier and Amery Ice Shelf are thought to be due to a major fault along the Lambert Glacier, and a rift structure under the Amery Ice Shelf. To the west of these structures the free air anomalies trend mainly east-west.

L-20795

Scientific Committee on Antarctic Research, **SCAR Working Group on Solid Earth Geophysics,** *Polar record,* May 1978 19(119), SCAR bulletin No. 59, May 1978, p.195-197.

The meeting of the solid earth geophysics working group was held near Madison, Wis., Aug. 26, 1977. The agenda included matters pertaining to standing resolutions, national reports, IASPEI/IUGG, the antarctic geomagnetic map project, compilation of antarctic gravity data, recommendations from the last meeting, the next meeting, election of a secretary, new recommendations, and other business.

L-20861

Stein, S., Okal, E.A., **Seismicity and tectonics of the Ninetyeast Ridge area: evidence for internal deformation of the Indian plate,** *Journal of geophysical research,* May 10, 1978 83(B5), p.2233-2245, 42 refs.

The mechanisms of several earthquakes have been determined, which suggest that the Ninetyeast Ridge area is presently a complex zone of deformation within the Indian plate. The northern portion of the ridge is the active seismic zone, where both vertical and strike slip motion occur, while further south the ridge is far less seismic. This transition roughly coincides with a change in the ridge's morphology from irregular en échelon blocks to a smooth flat-topped high. The strike slip motion is left lateral, which is consistent with the Indian (west) side encountering resistance due to the collision with Asia, while the Australian (east) side is subducting smoothly at the Sumatra trench. South of about 9S the style of deformation differs on the two sides of the ridge. To the east, normal faulting occurs, which may be related to the formation of grabenlike structures. To the west the topography can be interpreted as the result of NW-SE compression, which takes place largely aseismically, but is observed for one large earthquake. This significant intraplate deformation may explain the difficulties that occur in attempts to close the India-Africa-Antarctica triple junction using a rigid Indian plate. (Auth. mod.)

L-20862

Kellogg, K.S., Reynolds, R.L., **Paleomagnetic results from the Lassiter Coast, Antarctica, and a test for oroclinal bending of the Antarctic Peninsula,** *Journal of geophysical research,* May 10, 1978 83(B5), p.2293-2299, 36 refs.

Paleomagnetic results from 17 magnetically stable units of Cretaceous ('Andean') plutons and dikes of the Lassiter Coast, on the southern Antarctic Peninsula, define a mean paleomagnetic pole at 87S, 131W. This indicates that little latitudinal movement of the southern Antarctic Peninsula has occurred during the past 100 m.y. All magnetically stable intrusives are normally polarized and are believed to have been emplaced during the Late Cretaceous epoch of predominantly normal polarity. There is no evidence of postemplacement remagnetization. The uncertainty in declination at the 95% confidence level is computed for both the Lassiter Coast data and those data available from other Andean sites in the Antarctic Peninsula. Within the limits of uncertainty, data from four localities north of 68S support the contention of Dalziel et al (1973) that there has not been any apparent post-Late-Cretaceous oroclinal bending in the northern half of the peninsula. For sites to the south in the Lassiter Coast, the uncertainty in declination, due to steep inclinations, is too large to support reliably or deny any large-scale structural bending. (Auth.)

L-21007

U.S. Defense Mapping Agency Aerospace Center, **Antarctica—mean gravity anomalies,** St. Louis, Mo., Sep. 1974, 14p., ADB-922 851L, Translated from International Gravimetric Bureau. Bulletin d'information No.34, Mar. 1974.

This report describes the following subjects: the number of gravity stations set up on the continent of Antarctica and in the surrounding seas, and their geographic distribution; the mean values of the observation heights and, in a large number of cases, the heights of the

subglacial bedrock (or the sea depths beneath the observation stations); and the mean values of the gravity anomalies (free-air and Bouguer anomalies). (Auth.)

L-21019

Anderson, R.N., Von Herzen, R.P., **Heat flow on the Pacific-Antarctic Ridge,** *Earth and planetary science letters,* Dec. 1978 41(4), p.451-460, 20 refs.

Twenty-four heat flow measurements are clustered in 5-20 m.y. and 60-80 m.y. old seafloor on the crest and northern flank of the Pacific-Antarctic Ridge. The crestal heat flow stations are characterized by (1) low mean heat flow relative to that predicted by theoretical models, (2) thin sediment cover, and (3) high ratio of standard deviation to mean heat flow, all of which indicate a system dominated by convective heat transfer. The measurements made on older seafloor of the northern flank have (1) mean heat flow equal to the theoretical predictions of conductively-cooling lithospheric plate models, (2) thick sediment cover, and (3) low ratio of standard deviation to mean heat flow. Thus convective loss associated with hydrothermal circulation is not considered to be important in 60-80 m.y. old seafloor on the Pacific-Antarctic Ridge. The pattern of heat flow on this ridge is thus similar to that in the Atlantic, Indian and Pacific Oceans: hydrothermal circulation is dominant on the ridge crest but is suppressed on the flanks, possibly due to a difference in the hydraulic admittance of the sediment between the two regions. (Auth.)

L-21052

Morgan, W.J., **Rodriguez, Darwin, Amsterdam, ... a second type of hotspot island,** *Journal of geophysical research,* Nov.10, 1978 83(B11), p.5355-5360, 19 refs.

The Reykjanes ridge has been interpreted as the result of channeled asthenosphere flow from the Iceland hotspot (which produces new asthenosphere) down the rise axis (where asthenosphere is converted into lithosphere). Similar channeling is proposed for hotspots not exactly on a rise crest—a 'pipeline' from a hotspot to a nearby rise crest, with this second type of island forming at the intersection of the rise and pipeline. The geometry at Amsterdam and St. Paul islands suggests this type of process. These islands are at the rise crest 80 km north-south of one another, quite different from the 045 deg trend of fracture zones in this area. It is not readily apparent on a Mercator map because of the increasing scale towards the pole, but the rise crest is not centered between the Broken Ridge and Kerguelen Plateau here —it is closer to Kerguelen, as though rise jumps have brought it closer to the hotspot. Amsterdam and St. Paul are 1200 km north of Kerguelen; they could be the terminus of a channel from Kerguelen feeding the mid-Indian rise.

L-21089

Grushinskiĭ, N.P., Koriakin, E.D., Stroev, P.A., Lazarev, G.E., Sidorov, D.V., **Catalog of gravity stations in Antarctica (Explanatory notes and charts),** *U.S. Defense Mapping Agency Aerospace Center. Technical translation,* Feb. 1973 DMAAC-TC-1921, 13p., AD-758 399, For the entire catalog in Russian see 7L-13325.

Background information on the methods used in the survey is presented along with descriptions of the gravity station network, and the survey itself over both land and ice shelves.

L-21128

Davey, F.J., Christoffel, D.A., **Magnetic anomalies across Campbell Plateau, New Zealand,** *Earth and planetary science letters,* Sep. 1978 41(1), p.14-20, 26 refs.

Magnetic measurements over the Campbell Plateau, New Zealand, show the existence of a linear positive anomaly belt which extends for 900 km along an approximately east-west trend. This anomaly belt is considered to be a continuation of the Stokes Magnetic Anomaly occurring through New Zealand and associated with rocks of the New Zealand Geosyncline. If this is so, a transcurrent fault with a dextral displacement of about 330 km and aligned in a northeast-southwest direction must occur between the eastern end of the Stokes Magnetic Anomaly and the western end of the anomaly belt across Campbell Plateau. (Auth.)

L-21135

Galkin, R.M., Makarov, A.A., **Electromagnetic anomalies in the Mirnyy Observatory area** [Ob anomal'nykh elektromagnitnykh iavleniiakh v raĭone observatorii Mirnyĭ], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1977 Vol.64, p.47-50, In Russian. 6 refs.

The results of observations of magnetic and electrical field variations along a profile through pack ice are presented. Features of magnetic field anomalies affected by the coast are apparent.

L-21193

McCamy, K., **Research directed toward the use of long and intermediate period seismic waves for the identification of seismic sources,** *Columbia University. Lamont-Doherty Geological Observatory. Semi-annual technical report,* Mar. 1974 No.5, 8p., AD-778 827, 9 refs.

Seismology research conducted during the period July 1-Dec. 31, 1973, is summarized. Antarctic studies focused on the effect of multiple ruptures and other source time-function complications on surface wave focal mechanism determinations as part of a tectonic study of the Scotia Sea region. The effect of tectonic patterns on the focal mechanism of crustal earthquakes is also being investigated in island arc regions where a depth dependence of focal mechanisms indicates the possibility of oceanic crust lying beneath the continental crust. (Auth. mod.)

L-21194

McCamy, K., **Research directed toward the use of long and intermediate period seismic waves for the identification of seismic sources,** *Columbia University. Lamont-Doherty Geological Observatory. Semi-annual technical report,* Oct. 1974 No. 6, 13p., ADA-003 675, 2 refs.

A new technique of analyzing multi-mode surface wave dispersion has been developed, which makes it possible to separate fundamental and higher mode Love waves from earthquake sources, given many observations. The technique permits mapping the horizontal variations of Love wave phase velocities. The relation of earthquake focal mechanisms to global tectonic patterns has been extended to include the heretofore perplexing plate boundaries in the South Atlantic. Focal mechanism studies in the Scotia Sea have succeeded in defining the position and relative motions of the presently active plate boundaries, and thus added a needed constraint to the global pattern of the plate motions. (Auth. mod.)

L-21230

Vilas, J.F., Valencio, D.A., **Palaeomagnetism and K-Ar age of the Upper Ordovician Alcaparrosa Formation, Argentina,** *Geophysical journal,* Oct. 1978 55(1), p.143-154, 35 refs.

Paleomagnetic data from 71 hand samples of igneous rocks of Late Ordovician age exposed in western Argentina (31.3S, 69.4W, Alcaparrosa Formation) are given. Stable remanent magnetization was isolated in the majority of samples; they yield a paleomagnetic pole at 56S 33E. Whole rock K-Ar age determinations yield an age of 416 Myr for a pillow lava of the Alcaparrosa Formation. Paleomagnetic data for South America, Africa, Australia, Antarctica and India suggest that Gondwana was a unit at least as far back as 1000 Myr.

L-21342
Sutcliffe, P.R., **Geomagnetic L-variation at SANAE, Antarctica,** *South African journal of physics,* 1978 1(1), p.27-31, 13 refs.

The dependence of the geomagnetic lunar daily variation L at Sanae, Antarctica, on various factors was investigated. Magnetic activity has negligible effect on L, while the sunspot cycle effect on L is small. The seasonal dependence of L is similar to that previously found for other observatories, except that the range of L(Z) during the winter months is unexpectedly large. (Auth.)

L-21460
Flint, R.B., **Soviet-American geophysical research at Vostok Station** [Geofizicheskie nabliudeniia na stantsii Vostok po programme sovmestnykh sovetsko-amerikanskikh issledovaniĭ], *Sovetskaia antarkticheskaia ekspeditsiia. Trudy,* 1978 Vol.69, p.88-89, In Russian.

A brief description of geophysical observations carried out by a Soviet-American team at Vostok Station is given. The equipment used is described and some of the preliminary findings are reported.

L-21526
Knopoff, L., **Free oscillations of the Earth and tilt at the South Pole,** *Antarctic journal of the United States,* Oct. 1978 13(4), p.41-43, 1 ref.

During the 1977 winter season at Amundsen-Scott Station two LaCoste-Romberg tidal meters were operated as ultra-long period seismometers and a tilt survey was carried out in preparation for the installation of a long-period horizontal tidal meter. The frequency spectrum of the Indonesian earthquake as recorded at California U. and at the South Pole is shown and discussed. The absence of splitting in the South Pole record is particularly apparent. The rate of observed tilt corresponds to a station sinking rate of about 3 cm/yr. A search for a more tilt-free location away from the station will be instituted in the 1978 winter season.

L-21703
Grushinskiĭ, N.P., **Gravimetric measurements in Antarctica and their interpretation** [Gravimetricheskie opredeleniia v Antarktide i ikh interpretatsiia], *Antarktika; doklady komissii,* 1978 No.17, p.204-211, In Russian. 15 refs.

Gravimetric research in Antarctica and the evolution of concepts about the basic features of subglacial relief and the earth's crust are described. Averaged gravimetric maps and a figure showing thickness of the crust, constructed using data from deep seismic sounding, are included.

See also:
A-20272 A-21360 A-21363 A-21364 C-21702 E-19254 E-19255 E-19256 E-19258 E-19260 E-19264 E-19265 E-19278 E-19316 E-19329 E-19508 E-19634 E-19641 E-19653 E-19657 E-19659 E-19805 E-19810 E-19875 E-20148 E-20182 E-20797 E-20860 E-21003 E-21053 E-21224 E-21328 E-21330 E-21332 E-21333 E-21505 E-21507 E-21558 F-19686 F-20172 F-20279 F-20865 F-20980 F-21389 F-21538 I-19787 I-20425 I-21189 J-19633 J-21000 J-21572 J-21710 K-19743 K-21361

M. POLITICAL GEOGRAPHY

M-19324
Hawkes, N., **Science in Europe; moratorium set on antarctic oil at October meeting,** *Science,* Nov. 18, 1977 198(4318), p.709-712.

A moratorium on oil exploration and extraction in Antarctica, and the first outlines of a convention to govern fishing in the area were the main results of the Ninth Consultative Meeting in London, which ended Oct. 7. With respect to mineral exploration, all 13 nations agree that exploration and exploitation of Antarctica's oil is at least 10 to 15 years away. The U.S. conceded the most in agreeing to the moratorium because it has traditionally taken the view that mineral resources should be open to all. The majority were opposed to a formula which would not preserve Article 4 of the treaty, which freezes all territorial claims. The Soviet Union and Japan, the two nations already fishing in the Antarctic, favored a fishing regime which treats each species individually, while the Latin American countries argued in favor of a regime treating the ecosystem as a whole. In the end the Latin American view prevailed. While the details of a regime to control fishing are being negotiated, the treaty countries asked that great care be taken in harvesting so as not to reduce stocks or endanger species in antarctic waters. On less controversial topics the meeting agreed to improve the telecommunications system in Antarctica, coordinate the flights of supply aircraft so as to provide the beginnings of an antarctic air service, and to protect the environment. No agreement was reached on the control of tourism.

M-19381
Machowski, J., **Status of Antarctica in the light of international law,** Warsaw, Poland, National Center for Scientific, Technical and Economic Information, 1977, 149p., TT 76-54041, 96 refs. For Polish original see 8M-15424.

This is a translation of a doctoral thesis defended at the University of Warsaw in 1964. The author opens with a discussion of Antarctica as an object of international law, then proceeds to deal with the legal status of various areas of Antarctica: land; maritime; ice; and air space. The final chapter investigates the legal status of the area in the light of the provisions of the Antarctic Treaty of 1959 and discusses the treaty as a precedent not only for the south polar region but for space law also.

M-19570
Auburn, F.M., **United States antarctic policy,** *Marine Technology Society. Journal,* Feb.-Mar. 1978 12(1), p.31-36.

The author reviews past and present U.S. policy in the Antarctic, its attitude toward the Antarctic Treaty and the direction taken by its research efforts. He asserts that in general these have not been consistent with national interests and that, as resource development in the Antarctic becomes more vital and widespread, the United States must expand and revamp its antarctic involvement if it is not to fall behind other Treaty and even non-Treaty nations in its exploitation of the polar continent.

M-19580
Press Briefing Seminar on the Future of Antarctica, London, July 25, 1977, **The future of Antarctica,** Earthscan Press Briefing Document No.5, London, 1977, 36p.

This is a thumbnail sketch of the antarctic continent as a future source of wealth and a present political problem. Original claims and discoveries are reviewed, then the positions of claimant and non-claimant nations briefly set forth. Reasons for interest in the area—scientific, military, mining and drilling, fishing, and tourist—are outlined. The role of the Antarctic Treaty is discussed and the pressures under which it now exists explained.

M-19581
Ratiner, L., [**Press briefing**], Future of Antarctica: Press briefing seminar, London, Earthscan, July 1977, 18p.

Arguing that any attempt to disregard or override the issue of sovereignty and claims to the Antarctic is unrealistic and counterproductive, the author suggests a condiminium arrangement, whereby economic development would be administered by the Treaty signatories. Mineral rights and other interests would be open to all investors, and a share of the profits would be paid to the country claiming the area.

M-19582
Ruivo, M., [**Press briefing**], Future of Antarctica: Press briefing seminar, London, Earthscan, July 1977, 7p.

The author, director of the Portuguese Secretariat of Fisheries, stresses the determination of the Third World powers, those without significant technological resources and without navies, to participate in the drawing up of fisheries agreements dealing with the Southern Ocean. The Conference on the Law of the Sea overlaps with the antarctic problem, since arrangements made regarding non-territorial waters would presumably apply even to antarctic coastal waters in the absence of recognition of sovereign rights to the continent.

M-19583
Laws, R., [**Press briefing**], Future of Antarctica: Press briefing seminar, London, Earthscan, July 1977, 16p.

The author, director of the British Antarctic Survey, reviews the past and present role of SCAR in Antarctic research and development. A number of the resources in the antarctic region should not be exploited until more information is available both on the probable impact on the resource itself and on the overall effect on ecology. The Antarctic Treaty deals to some extent with conservation, but further safeguards, the exact nature of which SCAR could help to determine, are necessary if the Antarctic area is not to be ruthlessly disrupted.

M-20004
Battaglini, G., **Law of nations in polar regions** [I diritti degli stati nelle zone polari], Turin, Unione Tipografico-editrice Torinese, 1974, 228p., In Italian. Numerous refs. passim.

DLC JX4084.P65B37

The three types of areas examined are the Arctic (sea surrounded by land), the Antarctic (land surrounded by sea) and subpolar regions, some of which are generally considered to fall under national jurisdiction. Existing laws and treaties are discussed as they impinge on resource development of sea, land and ice, as well as on coastal drilling operations. Various proposals to deal with claims to antarctic territory while maintaining the international spirit of the current status are considered.

M-20151
Soden, D.L., **Political and legal analysis: the Antarctic Treaty,** Jan. 1978, 90p., Unpublished manuscript. 120 refs.

This paper focuses on the political and legal concerns associated with renewed interest in Antarctica to serve as input in determining the ultimate success or failure of its regime in a new political era. The history of the Treaty, the current status of the region and its future are discussed. Special focus is placed on the role of the Southern Ocean, minerals, the Law of the Sea Conference, and possible administrative regimes which will effect the continent's political future.

M-20174
Fitte, E.J., **Chronicles of the South Atlantic: Patagonia, Falkland Islands and Antarctica** [Crónicas del Atlántico Sur: Patagonia, Malvinas y Antártida], Buenos Aires, Emecé, 1974, 467p., In Spanish. Numerous refs. passim.
DLC F2936.F54

This is primarily a political history of the South Atlantic area and traces the competition for this part of the world, especially that between the British and the Argentinians for domination of the Falkland Islands. A case is put forth for Argentine sovereignty over the Antarctic Peninsula as well. Activities of whalers, sealers, missionaries, explorers, and other arrivals from all nations are chronicled.

M-20189
Sollie, F., **Legal status of the Antarctic,** 1976, 9p., AA:P157, Unpublished manuscript.

This background paper, prepared for the SCAR/SCOR Conference on the living resources of the Southern Ocean, discusses the legal and political issues relating to the exploration and exploitation of living marine resources and mineral resources in the Antarctic, and the regulation of such activities in light of the Antarctic Treaty, as well as questions relating to territorial claims, jurisdiction, third-party activities, and the geographical area of application of the Treaty. It is suggested that Article IX may be the most important provision of the Treaty by providing for meetings for the purpose of exchanging information, consulting together on matters of common interest pertaining to Antarctica, and formulating, considering, and recommending to their Governments measures in furtherance of the principles and objectives of the Treaty. The past adoption of recommendations, within the consultative procedure, to conserve Antarctica's living resources and to encourage further studies relative to the preservation of marine living resources and mineral resources, reflect the concern of the Consultative Parties for these problems in relation to the Antarctic Treaty.

M-20250
Blanco, C.L., **Meeting in Oslo: 8th Consultative Meeting of the parties to the Antarctic Treaty** [Encuentro en Oslo: VIII Reunión Consultiva de las partes contratantes del Tratado Antártico], *Antártida,* June 1975 No.6, p.5-7, In Spanish.

This a brief account of the eighth Antarctic Treaty Consultative Meeting held in Oslo in June, 1975. Particular stress is laid on the role of the Argentine Republic, one of whose primary interests is antarctic tourism, a topic under discussion at the conference. Guidelines for tourists to minimize environmental damage were set forth by the Argentine delegation.

M-20252
Capdevila, R., **1906—appointment of deputies for the antarctic islands and territories** [1906: nombramiento de comisarios para islas y tierras antárticas], *Antártida,* June 1975 No.6, p.12-14, In Spanish.

This article reviews the first appointment of Argentine officials to oversee the islands and territories considered as the Argentine Antarctic. Several documents shedding light on this early period in the history of antarctic politics have recently come to light. Although the Argentinians were sealing and sending teams of explorers south as early as 1818, the first officials were not appointed until 1906.

M-20288
Theile, K., **Possibilities of internationalization of Antarctica,** St. Gallen, Switzerland, University, 1977, 117p., Ph.D. thesis. In German with English appendices. Refs. p. 74-77.
DLC JX4084.A5T48

After discussing the principles of international law governing territorial claims in special geographic areas, such as Antarctica, the existing claims of different nations are listed. Various forms of international control suggested by a number of authors are then reviewed. Finally, the author's own proposal for an "International Agency for Antarctica" is set forth. I.A.A. would operate under the supervision of the General Assembly of the UN, based on the principle of sovereign equality of member nations. It would include a "Company for the Exploitation of the Minerals and the Sea of Antarctica", a cooperative that would issue concessions for exploitation to private or public enterprises, and an "Antarctic Company", a stock company directly involved in exploitation and processing. Legal and organizational aspects of the proposed solution are discussed.

M-20324
Report of the Ninth Antarctic Treaty Consultative Meeting, London, 1977, *Polar record,* Jan. 1978 19(118), SCAR bulletin No.58, Jan. 1978, p.85-94.

The agenda of the ninth consultative meeting included consideration of 17 items and the appointment of four main working groups, as well as working committees to assist in reaching conclusions on certain items. The consultative parties unanimously adopted recommendations on antarctic mineral and marine living resources, telecommunications, cooperation in transport, man's impact on the antarctic environment, and oil contamination of the environment. Regarding antarctic resources, it was urged that further studies be carried out pertaining to the environmental implications and preservation of antarctic mineral and marine living resources, that a definitive regime be established for the conservation of marine sources, and that the antarctic environment be protected from all forms of human interference.

M-20379
U.S. Congress. House. Committee on Merchant Marine and Fisheries. Subcommittee on Fisheries and Wildlife Conservation and the Environment, **Marine Mammal amendments. Hearings on Save the Great Whales (H.J. Res. 923), Killer whales (H.R. 12460, H.R. 12646, S. 3130), and Tuna-Porpoise amendments (H.R. 13865, H.R. 13883), 94th Congress, 2nd Session,** Washington, U.S. Government Printing Office, 1976, p.1-170. Serial No.94-29.

This volume of House subcommittee hearings contains two that related to antarctic whale species. The first is a discussion of a Joint Resolution to save the great whales from extinction, which is designed to strengthen the Fishermen's Protection Act of 1967 by more carefully defining 'commercial whaling' and by applying economic sanctions against products and nations taking whales or marketing products in violation of International Whaling Commission regulations or good conservation practice. The second set of hearings relates to the killer whales, which are not primarily a commercial species but are taken for aquariums and other non-scientific reasons. Testimony was

heard on both types of whaling problems from a wide variety of public and private agencies such as NOAA, Marine Mammal Commission, Marineland, Friends of the Earth and other interested parties.

M-20380
U.S. Congress. House. Committee on Merchant Marine and Fisheries. Subcommittee on Fisheries and Wildlife Conservation and the Environment, **Antarctic fauna and flora conservation (H.R. 7749). Hearings before the Subcommittee on Fisheries and Wildlife Conservation and the Environment...95th Congress, 1st Session,** Washington, U.S. Government Printing Office, 1978, p.247-370. Serial No.95-18.

This is the report of a hearing on the Antarctic Conservation Act of 1977, a complete copy of which is included. Speakers from the State Department, the Council on Environmental Quality, NOAA, the National Science Foundation and other public and private groups were heard. Their prepared statements are printed, and their testimony emphasizing portions of the written statements recorded in full. Maps showing areas of the Antarctic continent to receive special protection under the Act and a complete text of the Antarctic Treaty are also appended.

M-20381
U.S. Congress. House. Committee on the Judiciary. Subcommittee on Immigration, Citizenship, and International Law, **Extraterritorial criminal jurisdiction. Hearing on H.R. 763, H.R. 6148, and H.R. 7842, 95th Congress, 1st Session,** Washington, U.S. Government Printing Office, 1977, 191p. Serial No.16.

This hearing was conducted on the Antarctic Crimes Act of 1977, concerned with the regulation of cases of criminal acts arising among both civilian and military personnel while stationed in or visiting the antarctic area. Witnesses from the Department of Defense, National Science Foundation, Department of State, Department of Justice and other interested agencies were heard. Appended are the Antarctic Treaty and copies of legislation of similar intent promulgated by other western nations such as Australia and the United Kingdom.

M-20590
Antarctic Treaty Consultative Meeting, 8th, Oslo, Norway, June 9-20, 1975, **Report,** Oslo, Ministry of Foreign Affairs, 1976, 76p.

DLC JX4084.A5A55

This report of the 8th Consultative meeting is comprised of five sections: 1) Final report, 2) Recommendations adopted at the meeting, 3) Speeches and statements made at the opening session, 4) List of participants, and 5) List of documents. Man's impact on the antarctic environment, marine living resources, and the effects of mineral exploration and exploitation were among the topics of concern discussed at the meeting.

M-20789
Roberts, B., **International cooperation for antarctic development: the test for the Antarctic Treaty,** *Polar record,* May 1978 19(119), p.107-120.

This discussion of the Antarctic Treaty is comprised of five parts: an introduction, the achievements so far, future economic developments, outstanding political issues, accession to the Antarctic Treaty and the acquisition of 'consultative status', future international consultation and administrative matters, and conclusions. Future economic developments which will require increasingly urgent attention include: 1) mineral exploration and exploitation, 2) fisheries research and exploitation, 3) man's impact on the antarctic environment, 4) tourism and other forms of recreation, 5) disposal of nuclear and other toxic wastes, and 6) icebergs as a source of fresh water. The regulation of fisheries and mineral exploration are considered the most urgent political issues. Accession to the Antarctic Treaty and the acquisition of 'consultative status' are urged for all nations taking an active part in antarctic research to ensure that these states become fully informed about current events in the Treaty area and act in accordance with recommendations made by Consultative Meetings. In view of the fact that the more significant agreements under the Treaty take several years to push through, it is suggested that more frequent preparatory meetings be held before each Consultative Meeting to speed up Antarctic Treaty procedures. 501
$c

M-20832
Salisbury, D.F., **Antarctica: geopolitical football,** *Technology review,* Mar./Apr. 1977 79(5), p.14, 80.

The author reports on the geopolitics behind scientific research in Antarctica. It is suggested that to a number of nations antarctic research is tantamount to resource exploration. Poland is developing methods to harvest krill, the Soviets recently announced the discovery of a mountain of high-grade iron ore and have established a base in an area where coal has been found, and East German scientific papers stress the fact that they are searching for valuable resources. U.S. resource evaluation programs this season include an attempt to inventory the amount of uranium in dark sandstones which band the cliffs in the dry valley region, and an expedition to the Dufek Intrusive, an extension of South African geologic strata that contains chromium and platinum deposits. It is suggested that this resource potential, as well as that of petroleum and natural gas threaten to turn antarctic exploration into exploitation, jeopardizing international scientific cooperation on the continent in the bargain.

M-20987
Mann, E.K., **National security policy for the Antarctic,** Auburn, Alabama, Auburn University, May 1974, 117p., ADB-920 612L, Master's thesis. Refs.

This study discusses the Antarctic, its historical background, politico-legal status, economic potential, and military significance for the US vis-a-vis the Soviet Union. It concludes that neither the US nor the Soviet Union has a strategic military interest in the Antarctic, and that US national interests are generally well served by the Antarctic Treaty. Economic opportunities are evaluated as very minor, although plankton and liquid and gaseous hydrocarbons are viewed as increasingly susceptible to exploitation. Economic and legal problems are cited as likely causes of international friction, and several preventive actions by the US Government are recommended. An appendix summarizes 15 previous studies. (Auth.)

M-21065
Wilson, G.P., **Antarctica, the Southern Ocean, and the law of the sea,** *U.S. Judge Advocate General's Dept. (Navy). JAG journal,* Summer 1978 30(1), p.47-85, 143 refs.

The ongoing law of sea negotiations leave unanswered the juridical nature of the Southern Ocean, including the coastal waters and coastal area of Antarctica. The author examines the unique legal status of Antarctica in juxtaposition with current law-of-sea proposals, and, in view of the potentially rich economic resources of the antarctic continental shelf, recommends alternative approaches for resolving the Southern Ocean problem. (Auth.)

M-21075
Bertrand, G.A., **Antarctica: conflict or compromise,** *Frontiers,* Autumn 1978 43(1), p.8-12.

DSI 505.73F93

This paper examines the potential conflicts over living and nonliving resource exploitation in the Antarctic. The issues include questions of claimant rights, resource allocation and harvesting quotas, jurisdiction over marine resources, the rights of individual

nations to exploit resources in areas recognized by many as international, and the impacts of offshore gas and oil exploitation on living resources' use. Also, attention is focused on the treaty and actions of the thirteen consultative nations. The treaty-powers meetings and records of deliberations are held in confidence, a format which has resulted in mistrust and misunderstanding. Antarctica could be the primary focus of today's common heritage issue, as the best example of resources belonging to all mankind—present and future generations. It is suggested that the Antarctic Treaty and consultative powers have managed the Antarctic well, but to continue to do so will require the difficult creation of a regime that both provides the greatest possible benefits to all mankind and still preserves Antarctica's unique resources for future generations.

M-21266
Auburn, F.M., **Offshore oil and gas in Antarctica,** *German yearbook of international law,* 1977 Vol.20, 173p., 300 refs.

Development of interest of the Antarctic Treaty Consultative Meetings in offshore oil and gas is traced from 1969. It is not clear whether the Treaty covers offshore areas, nor have the Meetings taken an unequivocal stand on the issue. Differences on sovereignty and jurisdiction seriously hinder development of a regime. The relationship between SCAR and Consultative Meetings, the attitude of Consultative Parties to U.N. agencies and the application of the Treaty regime to offshore minerals are examined in detail. (Auth.)

M-21273
Invasion postponed, *Economist (London),* Jan. 4, 1975 254(6854), p.42-43.

A major newspaper in Buenos Aires issued a call for recruits to invade the Falkland Islands and wrest them from Britain. Most of the settlers on the islands are of British descent and would be irretrievably alienated by any forceful Argentine move. To avoid this, the Argentine government closed the newspaper and avoided an international incident.

M-21296
Villarroel, E.G., **Notes for a book on "The Diplomatic History of the Antarctic Treaty and Chilean Participation in its Elaboration"** [Apuntes para un libro sobre la "Historia diplomática del Tratado Antártico y la participación chilena en su elaboración"], *Santiago de Chile. Instituto Antártico Chileno. Revista de difusión,* Dec. 1978 No.10, p.41-74, In Spanish.

This article traces the course of Chilean diplomacy with regard to the Antarctic from the pre-World-War-II years until the present.

M-21366
British we remain?, *Economist (London),* Nov. 30, 1968 229(6536), p.35.

In 1965 the United Nations passed a resolution urging Britain to discuss the future of the Falkland Islands with Argentina, who claims them. Caught between its own aim that the islands be turned over and the desires of the overwhelmingly pro-British population of the islands, the British government has been forced to negotiate with the Argentinians while at the same time reassuring her own colonial subjects that they will not be forsaken against their will. The Falklands are not an economic success; Argentina wants them primarily for political reasons.

M-21367
Lord Chalfont's islands, *Economist (London),* Dec. 7, 1968 229(6537), p.20.

Lord Chalfont, British Foreign Office representative in the Argentine-British negotiations over the Falkland Islands, is said to be sending out confusing and contradictory signals over Britain's position. Britain would win any plebescite by a landslide, but Argentina insists that the islanders' preferences not be considered. Although Britain assures her subjects that they will not be sold out, her actions and wavering engender fear both at home and in the Falklands that she will turn them over to Argentina. From a practical standpoint a turnover would profit neither country greatly; the islands cost Britain very little to run and would bring no economic advantage to Argentina.

M-21368
Baa, baa, *Economist (London),* Dec. 7, 1968 229(6537), p.33.

British subjects on the Falkland Islands are angry and afraid following a visit by Lord Chalfont, Foreign Office representative in Britain's negotiations with Argentina over Falkland sovereignty. Although he insists that the islanders will not be turned over without their assent, the draft of a position paper to be signed by both countries makes it clear that Britain hopes that the Falklanders will come to desire transfer. Arguments put forth to convince the islands that their future would be brighter with Argentina are largely economic—supplies and communications could possibly be more reasonable originating from Buenos Aires than from Montevideo or London, where they now are handled.

M-21369
Sollie, F., **Trends and prospects for regimes for living and mineral resources in the Antarctic,** Lysaker, Norway, Fridtjof Nansen Foundation at Polhögda, 1979, 20p., Based on a talk given at the Law of the Sea Institute 12th Annual Conference, The Hague, Oct. 1978.

The author gives a brief review of the main issues in the development of the Antarctic Treaty system and points to some of its main principles and achievements. He then discusses potential resources and their possible exploitation before indicating steps that have been taken to assess the need for and to work toward establishing a regime for the exploration and use of mineral and marine resources. He attempts to evaluate the prospects for future development.

M-21468
Oxman, B.H., **The antarctic regime: an introduction,** *University of Miami law review,* Dec. 1978 33(2), p.285-297, Numerous refs.

To introduce the reader to the symposium *Antarctic resources: a new international challenge,* that is the subject of this issue, the author briefly reviews the Antarctic Treaty and the silence of that organ on what is increasingly becoming a vital concern—economic development of the area. He identifies the factors that contribute to the growing urgency of arriving at an international solution to the problem of exploiting southern resources.

M-21469
De Blij, H.J., **Regional geography of Antarctica and the Southern Ocean,** *University of Miami law review,* Dec. 1978 33(2), p.299-314, Numerous refs.

The author first analyzes the various regional definitions used to delimit the area of antarctic influence. A brief historical background is followed by a geographical analysis of the Southern Region, divided into the Antarctic mainland (including ice sheet, ice shelves, exposed bedrock and underlying landmass, and the pack) and the Southern Ocean.

M-21473
Alexander, F.C., Jr., **Recommended approach to the antarctic resource problem,** *University of Miami law review,* Dec. 1978 33(2), p.371-423, Numerous refs.

The author reviews the history and sovereignty issue in Antarctica. He discusses the shared and differing interests of claimant consultative parties, nonclaimant Antarctic Treaty consultative parties, and non-Treaty states' concerns. The viability of four possible solutions to the antarctic resource problem is considered—an international solution, recognition of claims, submissions of disputed claims to an international tribunal, and joint antarctic sovereignty. He then puts forth his own solution—a Joint Antarctic Jurisdiction—and discusses the way in which it would affect the interests of the various groups of states.

M-21474
Santa Cruz, F.Z., **Antarctic system and the utilization of resources** [El Sistema Antártico y la utilización de los recursos], *University of Miami law review,* Dec. 1978 33(2), p.426-473, In Spanish and English. Numerous refs.

The author discusses the legal status of Antarctica in the context of resource utilization. He posits the existence of a juridical regime which he denominates as the "Antarctic System". The author argues that this system has been established by the Antarctic Treaty, developed through Consultative Party Meetings and has resulted from continuing negotiations between states with widely differing interests and political philosophies. He concludes that any resolution of the problem of resource utilization must arise from within and be implemented through the Antarctic System. (Auth.)

M-21475
Pinto, M.C.W., **The international community and Antarctica,** *University of Miami law review,* Dec. 1978 33(2), p.475-487, Numerous refs.

The author analyzes the conflict surrounding Antarctica and its valuable resources. He concludes that any solution must reconcile the interests of those states claiming special rights to Antarctica with the interests of the growing number of lesser-developed states that are calling for an equitable restructuring of the world economic order. He then proposes utilizing the procedural framework of the United Nations to provide a solution predicated on global cooperation. (Auth.)

M-21476
Hook, E.K., **Criminal jurisdiction in Antarctica,** *University of Miami law review,* Dec. 1978 33(2), p.489-514, Numerous refs.

Special problems are presented by the potential for criminal conduct in Antarctica. Various modes for asserting criminal jurisdiction are discussed, and the author concludes that a novel approach is required. The author proposes the creation of a multinational tribunal, which would incorporate certain traditional aspects of international courts but would also be designed to meet the unique needs of Antarctica. (Auth.)

M-21653
Argent, A., **Sunshine on Proclamation,** *Geographical magazine,* Feb. 1978 50(5), p.320-321.

The island on which Douglas Mawson raised the Union Jack and claimed Enderby, Kemp and Mac. Robertson Land for the Crown was named Proclamation Island in memory of the event. The author's team was assigned to revisit the island for only the second time since Mawson left in 1930 and to replace the container in which the proclamation document had been left and to pick up the wooden plaque for return to Australia for restoration and safekeeping. The group left a replica of the original plaque. The document, though wet, was still more or less intact.

M-21654
Auburn, F.M., **Antarctica and the questions of the exploitation of its resources,** *Australian foreign affairs record,* Dec. 1977 48(12), p.604-611.

The legal and political situation in Antarctica as it impinges on exploitation of living and mineral resources is discussed. Various international efforts, both within and without the Antarctic Treaty, to achieve ecologically safe and politically acceptable guidelines for development are reviewed. The special interests of Australia as one of the nearest nations and a sovereign power with antarctic claims are outlined.

See also:
A-19269 A-19438 A-19439 A-19440 A-19737 A-19866 A-20012 A-20199 A-20209 A-20833 B-20132 B-20275 B-20525 B-20794 E-21652 F-20403 F-20448 F-20449 F-20450 F-20480 F-20481 F-20482 F-20483 F-20490 G-20620 J-21285

AUTHOR INDEX

Abdul-Fattah, A.F.
Making decisions on iceberg utilization based upon multivariate utility theory: a case study in Saudi Arabia [1978, eng] **F-20475**
Role of iceberg utilization in solving the Saudi Arabian water problems [1978, eng] **F-20478**

Abe, O.
Internal friction of antarctic Mizuho ice cores at low frequency [1978, eng] **F-21304**

Abe, T.
Notes on some fishes associated with the antarctic krill. 1. *Neopagetopsis ionah* Nybelin [1978, eng] **B-20825**

Abe, Y.
Distribution of three geomagnetic components over Mizuho Plateau, Antarctica [1977, eng] **L-19523**
Gravity anomalies and bedrock relief in Mizuho Plateau [1978, eng] **L-19823**

Abele, G.
Runway site survey, Pensacola Mountains, Antarctica [1977, eng] **G-19368**

Abiko, T.
Distribution of trace elements around Syowa Station. 1. Particulate arsenic content [1977, jap] **I-19290**

Abyzov, S.S.
Selecting drills for microbiological studies of deep glacier layers at Vostok Station [1978, rus] **F-20726**

Académie des sciences, Paris. Comité national français des recherches antarctiques
Information bulletin No.59 [1976, fre] **A-20347**
Information bulletin No.60-61 [1976, fre] **A-20352**
Report No.10 to SCAR. Summary of scientific activities in 1967 and 1968 and of scientific research programs for 1969 [1968, fre] **A-20921**
Report No.16 to SCAR. Scientific activities from Mar. 1973 to Apr. 1974, research programs in progress (Apr. 1974-Dec. 1974) and projected (Dec. 1974-Dec. 1975) [1974, fre] **A-20922**
Report No.17 to SCAR. Scientific activities from Mar. 1974 to Apr. 1975, research programs in progress (Apr. 1975-Dec. 1975) and projected (Dec. 1975-Dec. 1976) [1975, fre] **A-20923**
Report No.19 to SCAR. Scientific activities from Mar. 1976 to Apr. 1977, research programs in progress (Apr. 1977-Dec. 1977) and projected (Dec. 1977-Dec. 1978) [1977, fre] **A-20924**

Acharya, H.K.
Investigations of seismic wave propagation in anisotropic and inhomogeneous media [1974, eng] **F-20782**

Ackley, S.F.
Primary productivity in sea ice of the Weddell region [1978, eng] **B-20937**
Sea ice studies in the Weddell Sea region aboard USCGC *Burton Island* [1977, eng] **F-19706**
Comparison between derived internal dielectric properties and radio-echo sounding records of the ice sheet at Cape Folger, Antarctica [1978, eng] **F-20356**
Sea ice and ice algae relationships in the Weddell Sea [1978, eng] **F-21544**

Adamenko, V.N.
Short-wave radiation attenuation by snow cover, ice and water investigated on the basis of data gathered in the Mirnyy area [1977, rus] **F-21138**
Experimental use of computers for data analysis in medical geographical research [1978, rus] **H-20614**
Investigating the connection between the pressure field aloft and ground-level meteorological conditions in Antarctica [1977, rus] **I-21139**

Adams, C.J.
Potassium-argon ages of granites and metasediments from the Bounty Islands area, southwest Pacific Ocean [1978, eng] **E-20541**

Adams, C.J.D.
Potassium-argon ages of schists from Chatham Island, New Zealand Plateau, southwest Pacific [1977, eng] **E-19467**
Paleomagnetism, K-Ar dating and tectonic interpretation of Upper Cretaceous and Cenozoic volcanic rocks of the Chatham Islands, New Zealand [1977, eng] **E-19805**

Adie, R.J.
Geology of Antarctica: a review [1977, eng] **E-19476**

Adrian, M.
Wildlife in the Antarctic [1978, eng] **B-20925**

Afanas'ev, B.V.
Antarctic polar front in the Drake Passage [1978, rus] **I-20638**
Observations of water temperature variations in the Drake Passage, summer 1976 [1978, rus] **J-20639**
Thermal structure of antarctic continental slope waters around Molodezhnaya Station [1978, rus] **J-20649**

African wildlife
Seals of the Antarctic [1974, eng] **B-20576**

Agenorov, V.K.
Estimate of spatial discreteness of deep-sea observations [1971, rus] **J-19517**

Ageta, Y.
Discharge of ice across the Sôya Coast [1978, eng] **F-19837**
Observations of sea-salt particles in the air in Mizuho Plateau [1978, eng] **I-19828**

Agrawal, S.P.
Solar-polar coronal holes and the north-south cosmic ray gradient [1978, eng] **K-20627**

Aguayo, A.
Antarctic fur seal, *Arctocephalus gazella* (Peters), in the Chilean Antarctic (Pinnipedia—Otariidae) [1977, spa] **B-20908**

Aguayo L., A.
Present status of the antarctic fur seal *Arctocephalus gazella* at South Shetland Islands [1978, eng] **B-20791**

Aguirre, N.
New northern limit for antarctic krill, *Euphausia superba* Dana, in the Pacific (Crustacea, Zooplankton) [1976, spa] **B-21010**
Illustrated key and latitudinal distribution of antarctic euphausiids (Crustacea, Zooplankton) [1976, spa] **B-21011**

Ahmed, S.
Making decisions on iceberg utilization based upon multivariate utility theory: a case study in Saudi Arabia [1978, eng] **F-20475**

Ainley, D.G.
Seabirds in antarctic marine ecosystems [1977, eng] **B-19604**
Activity patterns and social behavior of non-breeding Adelie penguins [1978, eng] **B-20621**

Ajello, J.
On the survival of organic compounds in the polar regions of Mars [1978, eng] **E-21093**

Akademiia nauk SSSR. Institut geografii. Materialy gliatsiologicheskikh issledovanii. Khronika obsuzhdeniia
Resolutions of a Workshop of the Glaciological Section, Feb. 1978 [1978, rus] **F-21387**

Akademiia nauk SSSR. Mezhduvedomstvennaia komissiia po izucheniiu Antarktiki
Antarctic; Commission reports, Vol.17 [1978, rus] **A-21685**

Akademiia nauk SSSR. Mezhduvedomstvennaia kommissiia po uzucheniiu Antarktiki
U.S.S.R. national report to SCAR, No.19 [1977, eng] **A-19568**

Akademiia nauk SSSR. Sovetskii komitet po antarkticheskim issledovaniiam
U.S.S.R. national report to SCAR, No.20 [1978, eng] **A-21064**

Akasofu, S.-I.
Auroras in the cusp region [1977, eng] **K-19720**
Recent progress in antarctic auroral studies [1978, eng] **K-20297**
Energy flux in the solar wind and magnetospheric substorms [1978, eng] **K-21631**

Akerman, G.
Sea ice and ocean energy balance studies at Mawson, Antarctica [1977, eng] **F-20891**

Akiyama, M.
Plankton and bottom deposits of Lake Funazoko-ike in Skarvs Nes, Antarctica [1975, jap] **E-19585**

Al Faisal, M.
Feasibility of using paddle-wheels for the propulsion of icebergs [1978, eng] **F-20466**

Water supply and weather modifications through the use of transported icebergs from the Antarctic [1977, eng] G-20904

Alaimo, S.
A.P.T. Station Marambio: receiver of weather satellite pictures [1975, spa] I-20253

Alarcón, B.
Geology of the Gerlache Strait between 64 and 65 deg S, Chilean Antarctica [1976, spa] E-21009

Albert, D.G.
Ross Ice Shelf Geophysical survey, 1977-1978 [1978, eng] F-21538

Aleksandrova, V.D.
Geobotanical regions of the Arctic and Antarctic [1977, rus] B-20007

Alekseev, G.V.
Antarctic polar front in the Drake Passage [1978, rus] I-20638
Studying Southern Ocean circulation [1978, rus] J-20635
Current measurement by means of buoys in the Drake Passage [1978, rus] J-20637
Observations of water temperature variations in the Drake Passage, summer 1976 [1978, rus] J-20639
Thermal structure of antarctic continental slope waters around Molodezhnaya Station [1978, rus] J-20649

Alekseev, I.I.
Penetration of solar flare protons into the polar caps [1975, eng] K-21161

Alekseeva, N.M.
Functional hormonal activity of the adrenals and sympathetic adrenal system during antarctic acclimatization [1978, rus] H-21037

Alekseeva, R.P.
Critical analysis algorithm for data obtained by observation of the direct solar and the global clear sky radiations [1977, rus] I-20428

Aleshkina, L.D.
Some comments on the morphology of crustaceans of the genus *Periplexis* (Copepoda, Syphriidae) with a more precise diagnosis of the genus [1978, rus] B-21440

Alexander, F.C., Jr.
Recommended approach to the antarctic resource problem [1978, eng] M-21473

Alexander, V.
Effects of ice facies on small scale oceanic phenomena: R/V *Hero* Cruise 77-1 [1977, eng] B-19609

Aliakrinskaia, I.O.
Physiological and biochemical features of the crested penguin [1977, rus] B-19539

Allen, K.R.
Assessment of antarctic minke whale stocks [1976, eng] B-20152
Some properties of the Schaefer model for baleen whale populations [1976, eng] B-20657
More flexible model for baleen whale populations [1976, eng] B-20660
Analysis of the stock-recruitment relation in antarctic fin whales *(Balaenoptera physalus)* [1973, eng] B-20731

Allen, R.
Deformation, serpentinization and emplacement of a dunite complex, Gibbs Island, South Shetland Islands: possible fracture zone tectonics [1977, eng] E-19322

Alley, R.B.
Bird and seal observations at Joinville Island and offshore islands [1978, eng] B-21595
Geologic studies in the northern Antarctic Peninsula, R/V Hero cruise 78-1B, February 1978 [1978, eng] E-21505

Allison, I.
Sea ice and ocean energy balance studies at Mawson, Antarctica [1977, eng] F-20891

Allison, R.G.
Proteins of penguin egg white and blood serum [1968, eng] B-19289

Allnutt, F.C.T.
Summary of environmental monitoring and impact assessment of the DVDP [1978, eng] B-19982

Allnutt, T.
Baseline microbiological data for soils of the Dufek Massif [1977, eng] B-19611

Al'tman, L.P.
Problems of exploitation and conservation of the ocean [1977, rus] J-20517

Ambrus, J.
Geology of the Gerlache Strait between 64 and 65 deg S, Chilean Antarctica [1976, spa] E-21009

American birds
Some observations of South Polar skuas *(Catharacta maccormicki)* on Georges Bank [1978, eng] B-21487

American Geophysical Union
Spring meeting 1977, abstracts [1977, eng] A-21360
Fall meeting 1977, abstracts [1977, eng] A-21363
Spring meeting 1978, abstracts [1978, eng] A-21364
Fall meeting 1978, abstracts [1978, eng] A-21365
Oceanic fronts [and] European Geophysical Society meeting abstracts [1977, eng] J-21362
IAGA/IAMAP Joint Symposia, abstracts [1977, eng] K-21361

American Geophysical Union. Transactions
RISP/RIGGS bypasses limits of man-made disciplines [1978, eng] A-21175

Amon, L.E.S.
Micropulsations observed by whistler-mode transmissions [1978, eng] K-20979

Amos, A.F.
Effect of glacial ice melting on the Antarctic Surface Water [1979, eng] E-21657
Green iceberg samples in the Weddell Sea [1978, eng] F-21541

Anderson, C.G.
Bacterial flora of antarctic krill *(Euphausia superba)* and some of their enzymatic properties [1978, eng] B-20504

Anderson, D.M.
Major international polar research problems [1978, eng] A-20210
Antarctic soil studies using a scanning electron microscope [1978, eng] E-20106

Anderson, G.C.
Oceanographic station data collected aboard R/V *Melville* during FDRAKE 75 [1977, eng] J-20078
Oceanographic data collected aboard R/V *T.G. Thompson* during FDRAKE 76, Legs I and II [1978, eng] J-20413

Anderson, J.B.
Sediments and sediment processes on high latitude continental shelves [1977, eng] E-19868

Anderson, M.E.
Systematic review of the fish genus *Lycodapus* (Zoarcidae) with descriptions of two new species [1978, eng] B-21428

Anderson, P.J.
Antarctica [1978, eng] A-20400
The other Richard E. Byrd: naval officer [1978, eng] A-20920

Anderson, R.N.
Heat flow on the Pacific-Antarctic Ridge [1978, eng] L-21019

Anderton, P.W.
Tephra and debris layers in the Skelton Névé and Kempe Glacier, south Victoria Land, Antarctica [1977, eng] E-20180

Andreev, A.D.
Critical analysis algorithm for data obtained by observation of the direct solar and the global clear sky radiations [1977, rus] I-20428

Andreev, F.V.
Ocular morphology of the king penguin [1977, rus] B-19538

Andreeva, N.N.
Critical analysis algorithm for data obtained by observation of the direct solar and the global clear sky radiations [1977, rus] I-20428

Andrews, C.J.H.
Pentobarbitone as an anaesthetic agent in the Adelie penguin (Pygoscelis adeliae) [1975, eng] B-21114
Spontaneous and bile salt stimulated bile secretion in the Adelie penguin *(Pygoscelis adeliae)* [1978, eng] B-21184

Andrews, M.K.
Doppler shifts on whistler mode signals received at Siple Station, Antarctica [1977, eng] K-19422

Andrews, P.B.
Depositional facies and the early phase of ocean basin evolution in the circum-Antarctic region [1977, eng] E-19255

Andrieux, P.
Electrical sounding methods applied to ice and glacier research. Results from 1962 to 1965 [1970, fre] F-20668

Angel, M.
Voyage of discovery [1977, eng] J-21022

Angell, J.K.
Global temperature variation, surface-100 mb: an update into 1977 [1978, eng] I-20883

Angino, E.E.
High-level and long-lived radioactive waste disposal [1977, eng] G-19327
Burial of high level radioactive wastes [1977, eng] G-19674
Disposal of radioactive wastes in the antarctic ice sheet: an environmental impact assessment [1978, eng] G-19984

Anikeev, N.E.
Efficient method of filleting toothfish and other large fish [1970, rus] **A-20811**
Annexstad, J.Q.
Processing and distributing antarctic meteorites collected during 1977-78 [1978, eng] **E-21638**
Antarctic Meteorite Working Group
Antarctic meteorite newsletter, Vol.1, No.1 [1978, eng] **E-20188**
Antarctic meteorite newsletter, Vol.1, No.2 [1978, eng] **E-20407**
Antarctic meteorite newsletter, Vol.1, No.3 [1978, eng] **E-20960**
Antarctic Treaty Consultative Meeting, 8th, Oslo, Norway, June 9-20, 1975
Report [1976, eng] **M-20590**
Antártida
Piedrabuena spends a month in Antarctica [1975, spa] **A-20255**
Accident-plagued 1974-75 antarctic campaign [1975, spa] **D-20254**
Fortunate route of James Weddell [1975, spa] **D-20261**
Geological field trip to the James Ross islands: GEOANTAR—the testimony of the rocks [1975, spa] **E-20251**
New installations at the southern end of the world [1975, spa] **G-20256**
Antezana, T.
New northern limit for antarctic krill, *Euphausia superba* Dana, in the Pacific (Crustacea, Zooplankton) [1976, spa] **B-21010**
Illustrated key and latitudinal distribution of antarctic euphausiids (Crustacea, Zooplankton) [1976, spa] **B-21011**
Aoyama, I.
Attitudes of the antarctic sounding rocket vehicles [1978, eng] **K-20956**
Magnetic field observations with sounding rockets [1979, jap] **K-21683**
Apostolescu, V.
Presentation of the 1:2,500,000 geologic map of Antarctica [1977, fre] **C-19753**
Geologic map of Antarctica: 1:2,500,000 [1977, fre] **E-19797**
Araoka, K.
Measurements of air permeability and elastic modulus of snow and firn drilled at Mizuho Station, East Antarctica [1978, eng] **F-21301**
Ardai, J.
Physical oceanography of the Ross Sea [1978, eng] **J-21553**
Ardai, J.L., Jr.
Circulation and melting beneath the Ross Ice Shelf [1979, eng] **J-21098**
Ardouin, B.
Accumulation of snow and radioactive debris in Antarctica: a possible refined radiochronology beyond reference levels [1977, eng] **F-20117**
Argent, A.
Sunshine on Proclamation [1978, eng] **M-21653**
Argentine Republic. Armada. Servicio Meteorológico
Reanalysis of synoptic maps of the South Pacific and Atlantic Oceans from April 1967 to March 1968 [1969, spa] **I-20214**
Armstrong, P.
Baobabs: remnant of Gondwanaland [1977, eng] **B-20580**
Armstrong, W.C.
Wave-induced particle precipitation effects at Siple Station [1978, eng] **K-21628**
Arnaud, P.M.
Oceanographic activities in the French austral and antarctic territories [1976, fre] **D-20349**
Arnoldy, R.L.
Polarization studies of Siple-Roberval Pc 1 micropulsations [1977, eng] **K-19714**
Correlative Pc 1 micropulsations and particle precipitation [1978, eng] **K-21625**
Arthur, R.J.
Success is predictable [1971, eng] **H-21120**
Asahina, K.
An expedition newspaper, *Antarctic News* [1978, jap] **A-20437**
Bacteriological investigation of the pollution at Syowa Station [1977, jap] **H-19303**
Antarctic physiology [1978, jap] **H-20435**
Asano, K.
On the examination against the parasites of antarctic krill, *Euphausia superba* [1978, eng] **B-21650**
Asgeirsson, V.
Systematic deviations of Nimbus-5 atmospheric temperature fields from radiosonde data over the winter Antarctic [1977, eng] **I-19459**
Ashby, M.F.
Effect of impurities on the creep of ice 1h and its illustration by the construction of deformation maps [1977, eng] **F-20109**
Ashton, D.H.
Studies on the ecology of the vegetation at Mawson Station, Antarctica [1978, eng] **B-21323**
Askin, R.
Immediate report of the Victoria University of Wellington Antarctic Expedition, 1971-1972 [1972, eng] **D-20919**
Askin, R.A.
Palynologic studies in the Transantarctic Mountains [1978, eng] **E-21510**
Atlas, R.M.
Ecological investigations of yeasts in antarctic soils [1978, eng] **B-20900**
Atomi, Y.
Body burdens of cesium-137 and potassium-40 in 21 members of the wintering party of the 16th JARE [1977, jap] **H-19301**
Attig, J.W., Jr.
Recent decline in available moisture in northern Victoria Land, Antarctica [1978, eng] **F-21339**
Auburn, F.M.
United States antarctic policy [1978, eng] **M-19570**
Offshore oil and gas in Antarctica [1977, eng] **M-21266**
Antarctica and the questions of the exploitation of its resources [1977, eng] **M-21654**
Australia. Bureau of Meteorology
International Antarctic Meteorological Research Centre [1967, eng] **A-20240**
Australia. Department of Science. Antarctic Division
Extract from the annual report: Antarctic Division 1977-78 [1979, eng] **A-21182**
Australia. Department of Supply. Antarctic Division
Annual report—1971-72 [1972, eng] **A-19953**
Australians in the Antarctic [1971, eng] **A-19954**
Australian Academy of Science. National Committee for Antarctic Research
Australian antarctic and sub-antarctic research programme, January 1976-March 1977; comments on current activities 1977; proposed programmes, January-December 1978 [1977, eng] **A-19858**
Australian antarctic and sub-antarctic research programme, January 1977 - March 1978; comments on current activities 1978; proposed programs, January-December 1979 [1978, eng] **A-21250**
Australian National Commission for UNESCO
Antarctic mass balance studies [1974, eng] **F-20057**
Aver'ianov, V.G.
Long-term accumulation characteristics at Vostok Station, Antarctica [1978, rus] **F-20615**
Antarctic glaciation and its role in world water regime and climate formation [1978, rus] **F-20673**
Avsiuk, IU.N.
20 years since conquest of the Pole of Inaccessibility [1979, rus] **A-21714**
Azam, F.
Microbial distribution and activity in and around McMurdo Sound [1977, eng] **B-19613**
Occurrence and metabolic activity of organisms under the Ross Ice Shelf, Antarctica, at Station J9 [1979, eng] **B-21103**
Microbial life beneath the Ross Ice Shelf [1978, eng] **B-21578**
Azibane, C.
Study of the climate of the Kerguelen Islands and subantarctic region of the Indian Ocean. Climatology of Port-aux-Français [1977, fre] **I-19464**
Azuma, T.
Acclimatization of physiological functions in Antarctica [1963, jap] **H-19441**
Bader, H.
Polar glaciology [1976, spa] **F-20193**
Critical look at the iceberg utilization project [1978, eng] **F-20453**
Bailleux, E.M.
Eucampia balaustium n. sp. Castr. and *Mölleria antarctica* n. sp. Castr. Taxonomy and nomenclature [1975, eng] **B-19309**
Baker, A.N.
Spectacled porpoise, *Phocoena dioptrica* new to the subantarctic Pacific Ocean [1977, eng] **B-20216**
Baker, D.J., Jr.
Polar sub-programme [1978, eng] **A-20983**
Baker, J.R.
Adelie penguin *(Pygoscelis adeliae)* embryonic development at different temperatures [1978, eng] **B-20632**
Baker, P.
Paulet Island and recent volcanism in the islands of the northwest Weddell Sea [1973, spa] **E-21086**
Baker, P.E.
Cenozoic volcanism in the Antarctic [1977, eng] **E-20277**

Baker, T.
Large-scale relative dynamic topography of the Southern Ocean [1978, eng] **J-20533**
Bakus, G.J.
Antarctic krill resource: prospects for commercial exploitation [1978, eng] **B-19864**
Antarctic krill: ecology and commercial exploitation [1978, eng] **B-21582**
Balech, E.
Microplankton from "Productividad 3" oceanographic cruise [1971, spa] **B-21269**
Ball, I.R.
Taxonomy and ecology of a new monocelid flatworm from Macquarie Island (Platyhelminthes, Turbellaria) [1977, eng] **B-21347**
Ballance, P.F.
Beacon Supergroup in the Allan Hills, central Victoria Land, Antarctica [1977, eng] **E-20752**
Balme, B.E.
Carboniferous and Permian palynostratigraphy in Australia and Antarctica: a review [1977, eng] **E-20396**
Balsley, B.B.
Dual coherent auroral radar observations from Siple Station, Antarctica [1977, eng] **K-19713**
Banerjee, S.K.
Limitations of ophiolite complexes as models for the magnetic layer of the oceanic lithosphere [1978, eng] **L-20624**
Barabasz, A.F.
Electroencephalography, isolation and hypnotic capability at Scott Base [1978, eng] **H-20877**
Baranov, G.I.
Wind drift of antarctic sea ice [1977, eng] **F-19788**
Circulation of the world ocean: global studies [1977, eng] **J-19782**
No-motion layer of the world ocean [1977, eng] **J-19783**
Computation of water circulation of the Southern Ocean by the isopycnic model [1977, eng] **J-19789**
Circumpolar countercurrent of the Southern Ocean [1978, eng] **J-21166**
Baranov, V.S.
Changes in the lipid fatty-acid composition of *Ocean* krill paste after cooking [1977, rus] **B-21437**
Barat, C.
Optical observations systems for the ARAKS experiment [1978, eng] **K-21420**
Barberot, R.
Neither just acres of snow nor a future Eldorado. France at work at the end of the world [1976, fre] **A-20344**
Barbiero, F.
Civilization under the ice; on the threshold of the discovery of the century [1974, ita] **A-21358**
Barcus, J.R.
Rocket measurements of energy deposition in the atmosphere by auroral X-rays [1977, eng] **K-19721**
Energetic particle precipitation from the magnetosphere [1978, eng] **K-20293**
Bardin, G.I.
Results of a vertical atmospheric profile on the Bellingshausen-Molodezhnaya route (Nov. 1973) [1978, rus] **I-20741**
Bardin, V.I.
Petrographic character of moraine deposits in Prince Charles Mountains (Mac.Robertson Land) [1978, rus] **E-20720**
Glacial geomorphology of the Lambert Glacier and its surrounding mountains [1977, eng] **E-21384**
Glacial mass balance of Antarctica [1965, rus] **F-20052**
Paleoglaciology in Antarctica [1978, rus] **F-21696**
Barker, G.M.
Reappraisal of *Athoracophorus bitentaculatus*, with comments on the validity of genus *Reflectopallium* (Gastropoda: Athoracophoridae) [1978, eng] **B-20550**
Barker, P.
What future for antarctic geology [1977, eng] **E-19454**
Barker, P.F.
Opening of Drake Passage [1977, eng] **E-19256**
Tectonic framework of Cenozoic volcanism in the Scotia Sea region—a review [1976, eng] **E-20147**
Towards a more certain reconstruction of Gondwanaland [1977, eng] **L-20278**
Barkov, N.I.
Stable isotope variations in snow and ice at Vostok, Antarctica [1977, eng] **F-20121**
Isotope analysis of ice cores from Vostok station (Antarctica), to the depth of 950 m [1977, eng] **F-20130**
Snow accumulation from 1970 to 1973 around Vostok Station [1978, rus] **F-20727**
Barmin, N.A.
Seasonal displacement of the auroral oval depending on geophysical data [1978, rus] **K-21462**
Barnard, S.
Seasonal and frontal variation in antarctic aerosol concentrations [1978, eng] **I-20781**
Barnett, J.J.
Antarctic atmosphere as seen by satellites [1977, eng] **I-20283**
Baross, J.A.
Microbial life at low temperatures: ecological aspects [1978, eng] **B-21169**
Barré, H.
Role of the photoperiod and of alimentation in the determinism of molt in the chicks of the King penguin *(Aptenodytes patagonicus* J.F. Miller) and Macaroni penguin *(Eudyptes chrysolophus* Brandt) [1977, fre] **B-19383**
Bird ringing in the Crozet Archipelago, Kerguelen, New Amsterdam and St. Paul Islands [1976, eng] **B-20777**
Bird ringing in the Crozet Archipelago, Kerguelen, New Amsterdam and St. Paul Islands [1976, eng] **B-21372**
Barret, P.J.
Densities, porosities, and seismic velocities of some rocks from Victoria Land, Antarctica [1978, eng] **E-20849**
Barrett, P.
Immediate report of the Victoria University of Wellington Antarctic Expedition, 1971-1972 [1972, eng] **D-20919**
Barrett, P.J.
Post-glacial Permian and Triassic Beacon rocks in the Beardmore Glacier area, central Transantarctic Mountains, Antarctica [1968, eng] **E-19250**
Barron, E.J.
Revised reconstruction of the southern continents [1978, eng] **E-20701**
Barrow, C.J.
Palynological studies in South Georgia: 1. Pollen and spore morphology of the native vascular species [1976, eng] **B-19550**
Postglacial pollen diagrams from South Georgia (sub-Antarctic) and West Falkland Island (South Atlantic) [1978, eng] **E-21215**
Barsdate, R.J.
Effects of ice facies on small scale oceanic phenomena: R/V *Hero* Cruise 77-1 [1977, eng] **B-19609**
Barthe, H.
Electron spectrometers for the study of artificially injected particles during the ARAKS experiments [1978, eng] **K-21414**
Barthelemy, J.L.
Nansen Drift Station Project—remote sea-ice runway construction [1978, eng] **F-19991**
Bartow, J.A.
New occurrences of dish structure in the stratigraphic record [1977, eng] **E-20015**
Basmaci, Y.
Delivery of icebergs to Saudi Arabia—an assessment [1978, eng] **F-20479**
Battaglini, G.
Law of nations in polar regions [1974, ita] **M-20004**
Bauer, E.
Non-biogenic fixed nitrogen in antarctic surface waters [1978, eng] **J-20991**
Bauer, E.A.
Race is on for Antarctica [1974, eng] **A-20578**
Baust, J.G.
Strategies of low-temperature survival in an antarctic insect [1978, eng] **B-21395**
Physiological basis of low temperature tolerance in antarctic insects [1978, eng] **B-21603**
Bayly, I.A.E.
Occurrence of *Paralabidocera antarctica* (I.C. Thompson) (Copepoda: Calanoida: Acartiidae) in an antarctic saline lake [1978, eng] **B-21351**
Bazilevskaia, G.A.
Cosmic-ray intensity in the near-earth atmosphere and at the surface of the earth [1975, eng] **K-21162**
Bé, A.W.H.
Ecology of planktonic foraminifera and biogeographic patterns of life and fossil assemblages in the Indian Ocean [1977, eng] **B-20102**

Bé, A.W.H. *(cont.)*
Ecological, zoogeographic and taxonomic review of Recent planktonic foraminifera [1977, eng] **E-20564**
Zoogeographic and taxonomic review of euthecosomatous Pteropoda [1977, eng] **E-20566**
Beaglehole, J.C.
Journals of Captain James Cook. 4. Life of Captain James Cook [1974, eng] **A-21270**
Beatty, J.A.
Catalog of entomological types in the Bishop Museum [1978, eng] **B-20995**
Beck, H.
Fermented alkane and krill meal as a fish meal substitute in trout fodder [1977, ger] **B-20969**
Beggs, J.M.
Geology of the metamorphic basement and Late Cretaceous to Oligocene sedimentary sequence of Campbell Island, southwest Pacific Ocean [1978, eng] **E-20542**
Belanger, P.
Man's impact on antarctic birds [1978, eng] **B-19987**
Belinskaia, L.V.
Feasibility of using satellite cloud-cover data to refine H-500 field analysis in the Southern Hemisphere [1975, rus] **I-20545**
Bell, B.G.
Notes on Antarctic bryophytes: 6. The genus *Dicranoweisia* on Signy Island, South Orkney Islands [1976, eng] **B-19562**
Bell, C.
Falkland Islands [1974, eng] **A-20246**
Bell, C.M.
Sedimentary rocks from Charcot Island [1976, eng] **E-19565**
Bell, T.F.
VLF line radiation in the Earth's magnetosphere and its association with power system radiation [1975, eng] **K-20507**
Nonlinear pitch angle scattering of energetic electrons by coherent VLF waves in the magnetosphere [1978, eng] **K-20535**
Stanford University VLF wave injection experiment on the ISEE-A spacecraft [1978, eng] **K-21234**
ISEE-1 satellite observations of signals from the Siple transmitter [1978, eng] **K-21627**
Bellafronto, R.L.
Aircraft salvage at dome C [1977, eng] **G-19733**
Public Works Department, *Deep Freeze* 78 [1978, eng] **G-21644**
Bellisio, N.B.
New distribution of *Champsocephalus gunnari* Lönnberg (Pisces, Chaenichthyidae) [1970, spa] **B-19738**
Belousov, B.G.
SD current direction changes in the vicinity of geomagnetic poles [1971, eng] **K-21088**
Ben-Avraham, Z.
Evolution of marginal basins and adjacent shelves in east and southeast Asia [1978, eng] **E-21231**
Bengtson, J.L.
Biota of the antarctic pack ice: R/V *Hero* cruise 76-6 [1977, eng] **B-19598**
Review of information regarding the conservation of living resources of the antarctic marine ecosystem [1978, eng] **B-20223**
Benninghoff, A.S.
Airborne particles and electric fields near the ground in Antarctica [1978, eng] **B-21602**
Benninghoff, W.S.
Airborne particles and electric fields near the ground in Antarctica [1978, eng] **B-21602**
Bentley, C.R.
Ross Ice Shelf geophysical survey, 1976-1977 [1977, eng] **F-19686**
Ultrasonic measurements on ice cores from Ross Ice Shelf, Antarctica, drill hole [1977, eng] **F-19690**
Impurities and seismic wave attenuation in the West Antarctic ice sheet [1977, eng] **F-20108**
Investigations of seismic wave propagation in anisotropic and inhomogeneous media [1974, eng] **F-20782**
Model for Holocene retreat of the West Antarctic Ice Sheet [1978, eng] **F-20857**
Dielectric permittivity of glacier ice measured *in situ* by radar wide-angle reflection [1978, eng] **F-21069**
Equilibrium state of the eastern half of the Ross Ice Shelf [1978, eng] **F-21336**
Ross Ice Shelf Geophysical survey, 1977-1978 [1978, eng] **F-21538**
Berger, J.P.
Optical observations systems for the ARAKS experiment [1978, eng] **K-21420**
Berggren, W.A.
Late Neogene chronostratigraphy, biostratigraphy, biochronology and paleoclimatology [1973, eng] **E-21195**
Berman, I.S.
Biogeographic aspects of the distribution and dynamics of water masses off the South American coast [1978, eng] **J-20933**
Bernasconi, I.
Antarctic echinoderms. III. Ophiuroidea 1. Ophiuroidea of the extreme north of the Antarctic Peninsula [1974, spa] **B-19332**
Astrotoma agassizii Lyman, viviparous species from the South Atlantic (Ophiuroida, Gorgonocephalidae) [1965, spa] **B-19412**
New species of antarctic ophiuroid: *Ophiurolepis granulifera* sp. nov. (Ophiuroidea, Ophiuridae) [1977, spa] **B-19573**
New species of antarctic ophiuroid: *Ophiomastus trispinosus* sp. nov. (Ophiuroidea, Ophiuridae) [1977, spa] **B-21430**
Erimicaster gracilis (Sladen, 1883) (Asteroidea, Porcellanasteridae) in the Antarctic Ocean [1977, spa] **B-21431**
Bernstein, N.
Impact of unfavorable ice conditions on bird productivity at Palmer Station during the 1977-78 field season [1978, eng] **B-21589**
Berry, M.G.
Eastward movement of the structure of auroral radio absorption events in the morning sector [1976, eng] **K-20689**
Berry, R.J.
Genetic variation in wild house mice: where natural selection and history meet [1978, eng] **B-19940**
Sub-antarctic house mice: colonization, survival and selection [1978, eng] **B-19952**
Berthelier, J.J.
Observations of the entry of solar protons into the magnetosphere by use of riometers [1974, eng] **K-20136**
F-lacuna events in Terre-Adelie and their relationship with the state of the ionosphere [1978, eng] **K-20629**
Ion analyzers for measurement of D.C. electric field and ion temperature [1978, eng] **K-21418**
Bertin, M.A.
Look at the Japanese Polar Research Program [1977, eng] **A-20520**
Bertrand, G.A.
Antarctica: conflict or compromise [1978, eng] **M-21075**
Beske-Diehl, S.
Limitations of ophiolite complexes as models for the magnetic layer of the oceanic lithosphere [1978, eng] **L-20624**
Bessarabov, B.F.
Krill meal as poultry feed [1976, rus] **B-19994**
Best, P.B.
Design and application of a coded format for recording observations of cetaceans at sea [1976, eng] **B-19897**
Status of whale stocks off South Africa, 1974 [1976, eng] **B-20661**
Betzel, A.F.
Conceptual design of a polar research ship [1977, eng] **G-19726**
Beu, A.G.
Nukumaruan records of the subantarctic scallop *Chlamys delicatula* and crab *Jacquinotia edwardsii* in central Hawke's Bay [1977, eng] **E-19465**
Fossil occurrence of *Jacquinotia edwardsii* [1977, eng] **E-19466**
Bickel, L.
This accursed land [1977, eng] **A-20011**
Bienati, N.L.
Primary production in antarctic waters [1977, eng] **J-20039**
Biggs, D.C.
Biogeography and metabolism of phytoplankton and zooplankton in the Ross Sea, Antarctica [1978, eng] **B-21580**
Non-biogenic fixed nitrogen in antarctic surface waters [1978, eng] **J-20991**
Billups, J.O.
Diving behavior of fur seals, *Arctocephalus gazella*, and king penguins, *Aptenodytes patagonica*, near South Georgia Island [1977, eng] **B-19596**
Bioscience
Life inside Martian rocks [1978, eng] **B-20799**
Bird, I.G.
Radar as an aid to surface navigation in Antarctica [1977, eng] **G-19348**
Unmanned geophysical observatory for antarctic operation [1972, eng] **K-20555**
Birkenmajer, K.
Polish antarctic activities 1976-78 [1978, eng] **A-20792**

Birney, E.
Colonial behavior of the Weddell seal in eastern McMurdo Sound [1978, eng] **B-21599**
Birnie, P.
Whale stocks—exploitation or moratorium [1977, eng] **B-19458**
Birnie, R.V.
Major rockfall and debris slide on the Lyell Glacier, South Georgia [1978, eng] **E-20009**
Biscay, P.E.
Recent sedimentation in the southeast Indian Ocean with special reference to the effects of Antarctic Bottom Water circulation [1978, eng] **J-19992**
Bischof, W.
Comparability of CO2 measurements [1977, eng] **I-19338**
Bishop, B.
Baseline microbiological data for soils of the Dufek Massif [1977, eng] **B-19611**
Bishop, W.W.
International law problems of acquisition and transportation of antarctic icebergs [1978, eng] **F-20480**
Biziuk, A.P.
Personality testing in psychosocial research at polar stations [1978, rus] **H-21041**
Psychosocial research at Vostok during the 19th SAE [1978, rus] **H-21042**
Blanco, C.L.
Meeting in Oslo: 8th Consultative Meeting of the parties to the Antarctic Treaty [1975, spa] **M-20250**
Blattner, P.
Geology and geochemistry of Mt Dromedary Massif, Koettlitz Glacier area, southern Victoria Land—Preliminary report [1978, eng] **E-20873**
Blight, D.F.
Metamorphic geology of the Windmill Island, Antarctica: a preliminary account [1977, eng] **E-20540**
Block, W.
Oxygen consumption of the terrestrial mite *Alaskozetes antarcticus* (Acari: Cryptostigmata) [1977, eng] **B-19482**
Effects of long-term storage on the oxygen uptake of *Cryptopygus antarcticus* (Collembola) [1977, eng] **B-20160**
Metabolic adaptations of antarctic terrestrial micro-arthropods [1978, eng] **B-21221**
Cold tolerance of two antarctic terrestrial arthropods [1978, eng] **B-21244**
Blond, G.
Our friends in the sea and on the coasts [1973, fre] **B-19745**
Blunt, D.J.
Amino acid racemization in *Islas Orcadas* piston core 12-77-24 [1978, eng] **E-21561**
Bobin, N.E.
Selecting drills for microbiological studies of deep glacier layers at Vostok Station [1978, rus] **F-20726**
Bockheim, J.G.
Soil development in the Taylor Valley and McMurdo Sound area [1977, eng] **E-19660**
Soil weathering sequences in Wright Valley [1978, eng] **E-21524**
Bodey, A.S.
Changing cold acclimatization patterns of men living in Antarctica [1978, eng] **H-21214**
Bodkin, J.B.
Fluorine, chlorine, and sulfur in Cenozoic volcanic rocks of Ross Island and vicinity, Antarctica [1978, eng] **E-20363**
Trace elements in volcanic rocks of Ross Island and vicinity, Antarctica, amd implications for the origin of alkali-basalt magma [1978, eng] **E-20365**
Boekelheide, R.J.
Seabirds in antarctic marine ecosystems [1977, eng] **B-19604**
Bogdanov, A.S.
Studying Southern Ocean biological resources [1978, rus] **B-21706**
Bogorodskiĭ, A.V.
Instruments for studying underwater portions of Southern Ocean icebergs [1978, rus] **F-20654**
Instrument studies of the submerged parts of icebergs in the Southern Ocean [1979, eng] **F-21263**
Bogorodskiĭ, P.V.
Using side-looking radar for studying ice undersurfaces [1978, rus] **F-20616**
Bogorodskiĭ, V.V.
Investigation of a subglacial lake near Molodezhnaya Station [1977, rus] **E-19796**
Studying the antarctic ice sheet by radio-echo sounding [1978, rus] **F-20679**
Radiosounding of ice [1976, eng] **F-20984**
Bogoslovskiĭ, M.M.
Studying personality and psychosocial adjustment in polar workers using a test [1978, rus] **H-21043**
Boland, F.M.
Buoy and ship examination of the subtropical convergence south of Western Australia [1978, eng] **J-21233**
Bolshakova, O.V.
Diurnal latitude variation of the location of the dayside cusp [1977, eng] **K-19371**
Determination of the position of the polar boundary of the day cusp from the intensity of high-latitude pulsations [1976, eng] **K-21167**
Boltovskoy, D.
ARA *Islas Orcadas* cruise 6 in the Argentine Basin [1977, eng] **J-19632**
Boltovskoy, E.
Recent foraminifera [1976, eng] **B-20548**
Bonatz, M.
First results of gravimetric earth-tide measurements at Kerguelen Island in the South Indian Ocean [1976, eng] **L-20685**
Gravimetric earth tide station Kerguelen (Indian Ocean)—Results of the first measurement period January-May 1973 [1973, ger] **L-20687**
Bond, F.R.
Spherical harmonic analysis of the austral auroral oval [1978, eng] **K-20390**
Bondarenko, V.M.
Identification and biological characteristics of strains of psychrophilic bacteria isolated in diarrhea of polar workers and from antarctic lake water [1978, eng] **H-21427**
Booth, J.D.
Displaced antarctic diatoms in the southwestern and central Pacific [1976, eng] **B-21060**
Borns, H.W., Jr.
Ross Sea glaciations: events in Lower Victoria Valley [1978, eng] **E-21527**
Borodin, R.G.
Principles and methods of whaling regulation [Pt.1] [1977, rus] **A-21712**
Bostrom, C.O.
Observations of low-energy electrons from AE-C in the south polar cusp during the geomagnetic storm of September 21, 1977 [1978, eng] **K-21353**
Boteler, D.H.
Effect of induced currents in the sea on magnetic bays observed at a coastal observatory [1978, eng] **K-20285**
Botnikov, V.N.
Unloading of an IL-14 aircraft onto a giant iceberg [1977, eng] **G-19409**
Water budget of Drake Passage and Scotia Sea basin [1977, eng] **J-19373**
Bottino, N.R.
Lipids of the antarctic sei whale *Balaenoptera borealis* [1978, eng] **B-20820**
Bougaeff, S.
Preliminary note on some physiologieal data recorded on the Emperor penguin *(Aptenodytes forsteri)* [1972, fre] **B-20898**
Boutron, C.
Trace element content in East Antarctica snow samples [1977, eng] **F-20118**
Sulfate in antarctic snow: spatio-temporal distribution [1978, eng] **F-20505**
Trace metals in antarctic snows since 1914 [1979, eng] **F-21255**
Influence of natural and anthropogenic aerosols on geochemistry of polar snow [1978, fre] **F-21280**
Bowman, G.G.
Relationship between polar magnetic substorms, ionospheric height rises and the occurrence of spread-F [1978, eng] **K-20408**
Boyd, J.C.
Growth of Emperor penguin chicks at Cape Crozier, Ross Island, Antarctica [1972, eng] **B-21056**
Boyd, W.W., Jr.
Geology of the Saratoga Table quadrangle, Pensacola Mountains, Antarctica [1978, eng] **E-21257**
Geology of the Davis Valley quadrangle and part of the Cordiner Peaks quadrangle, Pensacola Mountains, Antarctica [1978, eng] **E-21258**
Boyle, E.A.
Distribution of dissolved copper in the Pacific [1977, eng] **J-19323**
Boyles, J.M.
Stratigraphical studies in Orville Coast and eastern Ellsworth Land [1978, eng] **E-21502**

Bozhinskiĭ, A.N.
Internal heating and surges of nontemperate glaciers [1978, rus] **F-21204**
Bradford, J.M.
Sea ice organisms and their importance to the antarctic ecosystem (Review) [1978, eng] **B-20878**
Ross Ice Shelf Project (RISP) 1977-78 [1978, eng] **F-20312**
Distribution of reactive phosphorus and plankton in relation to upwelling and surface circulation around New Zealand [1978, eng] **J-20805**
Brady, H.
Ross sea region in the Middle Miocene: a glimpse into the past [1979, eng] **E-21096**
Brady, H.T.
Freshwater lakes in Pleistocene McMurdo Sound [1977, eng] **E-19666**
Thalassiosira torokina n.sp. (diatom) and its significance in Late Cenozoic biostratigraphy [1977, eng] **E-19671**
Extraction of diatoms from glacial sediments [1977, eng] **E-19672**
Late Neogene diatom biostratigraphy and paleoecology of the dry valleys and McMurdo Sound, Antarctica [1977, eng] **E-19998**
Geological studies in southern Victoria Land, on Black Island, and on the McMurdo Ice Shelf [1978, eng] **E-21506**
Miocene diatom flora from bottom cores at RISP site J-9 [1978, eng] **E-21574**
Brasseur, G.
Long-term effect on the ozone layer of nitrogen oxides produced by thermonuclear explosions in the atmosphere [1978, eng] **I-21275**
Braun, O.
Antarctic meteorite Yamato 74123—a new ureilite [1978, eng] **E-20410**
Breiwick, J.M.
Population estimation of antarctic minke whales based on Japanese catch and effort data [1976, eng] **B-20662**
Bressler, S.L.
Polarity zonations, magnetic intensities, and the correlation of Miocene and Pliocene DVDP cores, Taylor Valley, Antarctica [1978, eng] **L-20364**
Brett, C.P.
Seismicity of the South Sandwich Islands region [1977, eng] **L-19267**
Brewer, P.G.
Direct observation of the oceanic CO2 increase [1978, eng] **J-21170**
Briat, M.
Evaluation of levels of Pb, V, Cd, Zn and Cu in the snow of Mt. Blanc during the last 25 years [1978, eng] **F-20882**
Briggs, W.M., Jr.
Ostracoda from the Pleistocene Taylor Formation, Ross Island, and the Recent of the Ross Sea and McMurdo Sound region, Antarctica [1978, eng] **E-21518**
Brinca, A.L.
Turbulence effects in the cyclotron resonance of monochromatic whistlers [1978, eng] **K-20996**
Briskin, M.
Authigenic gypsum in marine sediments [1978, eng] **E-20359**
Brodskiĭ, K.A.
Phylogeny of the family Calanidae (Copepoda) on the basis of a comparative morphological analysis of its characters [1975, eng] **B-20669**
Brodsky, R.F.
Locating icebergs + remote sensing [1978, eng] **F-20488**
Broecker, W.S.
Ageing and circulation of West Atlantic Deep Water [1977, eng] **J-20080**
Bromwich, D.H.
Some considerations in deriving poleward water vapor transport values for coastal East Antarctica [1978, eng] **I-21622**
Brook, M.
Age and position of the Ellsworth Mountains crustal fragment, Antarctica [1977, eng] **E-20090**
Brookfield, M.E.
Emplacement of giant ophiolite nappes. I. Mesozoic-Cenozoic examples [1977, eng] **E-19317**
Brooks, C.
Rb-Sr mantle isochrons and variations in the chemistry of Gondwanaland's lithosphere [1978, eng] **L-19879**
Brooks, R.L.
Ice sheet topography by satellite altimetry [1978, eng] **F-20414**
Brothers, N.P.
Corybas macranthus (Hook.f.) Reichb.f. (Orchidaceae), a new record for Macquarie Island [1978, eng] **B-21284**
Brown, M.J.
Corybas macranthus (Hook.f.) Reichb.f. (Orchidaceae), a new record for Macquarie Island [1978, eng] **B-21284**
Brown, R.
Physiological basis of low temperature tolerance in antarctic insects [1978, eng] **B-21603**
Brown, R.R.
On sudden commencement absorption events at the South Pole and their relation to the latitude of the lower cleft boundary [1978, eng] **K-20064**
On the poleward expansion of ionospheric absorption regions triggered by sudden commencements of geomagnetic storms [1978, eng] **K-20544**
Brown, S.G.
Twenty-ninth annual meeting of the International Whaling Commission, 1977 [1978, eng] **B-20322**
Whale marking—progress report 1975 [1976, eng] **B-20656**
Whale marking: a short review [1977, eng] **B-21027**
Thirtieth annual meeting of the International Whaling Commission, 1978 [1979, eng] **B-21719**
Brownell, R.L., Jr.
Cocconeis diatom on the skin of Franciscana [1977, eng] **B-20094**
Bibliography of antarctic krill [1977, eng] **B-20242**
Browning, J.A.
Why bother with Antarctica [1978, eng] **F-20788**
Access hole drilling through the Ross Ice Shelf [1978, eng] **F-21536**
Broyer, C. de
Revision of the genera *Ambasiopsis* K.H. Barnard and *Neoambasia* Dahl (Crustacea, Amphipoda) [1977, fre] **B-20155**
Bruchhausen, P.
Oceanographic observations near the edge of the Ross Ice Shelf in McMurdo Sound [1977, eng] **J-19622**
Physical oceanography of the Ross Sea [1978, eng] **J-21553**
Bruchhausen, P.M.
Fish, crustaceans, and the sea floor under the Ross Ice Shelf [1979, eng] **B-21102**
Bruhn, R.L.
Destruction of the Early Cretaceous marginal basin in the Andes of Tierra del Fuego [1977, eng] **E-21116**
Field and geochemical data bearing on the development of a Mesozoic volcano-tectonic rift zone and back-arc basin in southernmost South America [1978, eng] **E-21333**
Brunner, H.
"Mountains of German-Soviet friendship" in Enderby Land (Antarctica) [1977, ger] **C-21083**
Bryden, H.L.
Variability of deep flow in the Drake Passage from year-long current measurements [1977, eng] **J-19319**
Interaction of the Antarctic Circumpolar Current with topography south of New Zealand [1978, eng] **J-21548**
Bryden, M.M.
Body size and composition of Crabeater seals *(Lobodon carcinophagus)*, with observations on tissue and organ size in Ross seals *(Ommatophoca rossi)* [1976, eng] **B-19995**
Cow-pup behaviour of the Weddell seal, *Leptonychotes weddelli* (Pinnipedia), in McMurdo Sound, Antarctica [1979, eng] **B-21442**
Buchanan, J.E.
Antarctic krill resource: prospects for commercial exploitation [1978, eng] **B-19864**
Antarctic krill: ecology and commercial exploitation [1978, eng] **B-21582**
Bucher, G.J.
Geothermal studies in Antarctica [1977, eng] **E-19657**
Bucher, P.
Extraction of gases and dissolved and particulate matter from ice in deep boreholes [1977, eng] **F-20123**
Buck, K.R.
Primary productivity in sea ice of the Weddell region [1978, eng] **B-20937**
Sea ice and ice algae relationships in the Weddell Sea [1978, eng] **F-21544**
Buckley, F.
Cenozoic volcanism in the Antarctic [1977, eng] **E-20277**
Budd, W.
Modelling surging glaciers and periodic surging of the Antarctic ice sheet [1978, eng] **F-21113**
Budd, W.F.
Antarctic mass balance studies [1974, eng] **F-20057**
Isotopes, climate and ice sheet dynamics from core studies on Law Dome, Antarctica [1977, eng] **F-20124**
Distribution, movement and melt rates of antarctic icebergs [1978, eng] **F-20462**

Budyko, M.I.
Heat balance of the Earth [1978, eng] **I-21189**
Budylenko, G.A.
Fish as sperm whale prey in Southern Ocean whaling zones [1973, rus] **B-20582**
Sei whale behavior in the Southern Ocean [1973, rus] **B-20583**
Buenos Aires. Instituto Antártico Argentino
Activities of Argentina in Antarctica in 1977/78 [1977, spa] **A-19859**
Directives for the Winter Antarctic Project CINIAA 1968—Belgrano Station [1967, spa] **A-19974**
Directives for the summer antarctic project of the Argentine Antarctic Institute 1968-69 (CAVIAA 1968-1969) [1968, spa] **A-19975**
Directives for the winter antarctic project CINIAA 1969—Brown Station [1968, spa] **A-19976**
Directives for the antarctic winter project CINIAA 1970—Brown Station [1969, spa] **A-19977**
Directives for the antarctic summer project CAVIAA 1963-1964 [1963, spa] **A-20377**
Buenos Aires. Instituto Antártico Argentino. Dirección Nacional del Antártico
Summary of Argentine scientific antarctic programmes: summer season 1972/73 and winter 1973 [1972, eng] **A-19950**
Scientific station Almirante Brown [1973, eng] **G-19949**
LABEL, Upper Atmosphere Physics Laboratory, General Belgrano Station [1973, eng] **G-19951**
Bugrova, L.N.
Using dehydrated "Okean" protein paste in foods [1976, rus] **B-20821**
Buĭnitskiĭ, V.Kh.
Organic life in sea ice [1977, eng] **B-20036**
Some regularities of distribution and formation of floating sea ice in the Antarctic [1968, eng] **F-20329**
Melting and disintegration of shore ice in the Davis Sea [1968, eng] **F-20330**
New data on the physics of antarctic sea ice [1968, eng] **F-20331**
Influence of diatoms on the structure and strength of sea ice [1968, eng] **F-20332**
Structure and characteristics of fast ice in Alasheyev Bight [1968, eng] **F-20337**
Seventh voyage of the R/V *Ob'* [1968, eng] **J-20327**
Bulatov, IU.L.
Structure of large-scale circulation of Atlantic Ocean waters [1977, eng] **J-19741**
Bunce, E.T.
Bottom water flow through the Kane Gap, Sierra Leone Rise, Atlantic Ocean [1975, eng] **J-20508**
Burckle, L.H.
Distribution of displaced antarctic diatoms in the Argentine Basin [1978, eng] **B-20843**
Displaced antarctic diatoms in the southwestern and central Pacific [1976, eng] **B-21060**
Isochronous last-abundant-appearance datum (LAAD) of the diatom *Hemidiscus karstenii* in the sub-Antarctic [1978, eng] **E-19988**
Burger, A.E.
Interspecific breeding attempts by *Macronectes giganteus* and *M. halli* [1978, eng] **B-21315**
Burke, W.J.
Polar cap electric field structures with a northward interplanetary magnetic field [1979, eng] **K-21321**
Burns, D.A.
Major features of oceanographic development of the southeast Indian and southwest Pacific Oceans interpreted from microfossil evidence [1977, eng] **J-19257**
Burrell, J.
Opening of Drake Passage [1977, eng] **E-19256**
Burrows, A.L.
Geomagnetic field in New Zealand in 1975 [1978, eng] **K-20528**
Burrows, C.J.
Icebergs in the Southern Ocean [1976, eng] **F-20247**
Burton, H.
Antarctic saline lakes—stable isotopic ratios, chemical compositions and evolution [1979, eng] **E-21126**
Burton, S.J.
Legal/political aspects of antarctic iceberg utilization [1978, eng] **F-20482**
Burtsev, IU.A.
Geomagnetic measurement within a glaciological polygon [1978, rus] **F-20746**
Burukovskiĭ, R.N.
New species of shrimp, *Pasiphaea grandicula*, and a short outline of species of the genus [1976, rus] **B-19574**
Bush, Y.A.
Stratospheric measurements of methane at several latitudes [1978, eng] **I-21172**
Bushueva, I.V.
New species of *Acanthonotozomella* from the Davis Sea (East Antarctica) [1978, rus] **B-21441**
Bustamante, R.
New northern limit for antarctic krill, *Euphausia superba* Dana, in the Pacific (Crustacea, Zooplankton) [1976, spa] **B-21010**
Illustrated key and latitudinal distribution of antarctic euphausiids (Crustacea, Zooplankton) [1976, spa] **B-21011**
Bydder, E.L.
Lake Vanda (Antarctica) revisited [1977, eng] **E-20754**
Cadwalader, J.
Moving ice [1978, eng] **F-21078**
Cahill, L.J., Jr.
Polarization studies of Siple-Roberval Pc 1 micropulsations [1977, eng] **K-19714**
Correlative Pc 1 micropulsations and particle precipitation [1978, eng] **K-21625**
Calhoun, J.
South Pole approach [1978, eng] **G-20061**
Calkin, P.E.
Geomorphology and glacial geology of the Victoria Valley system, southern Victoria Land, Antarctica [1963, eng] **E-19271**
Callahan, W.S.
Review of the NOAA (NWS) meteorological program in the Antarctic [1976, eng] **I-21661**
Cambou, F.
The ARAKS project [1978, eng] **K-21408**
Cameron, R.E.
Environmental appraisal for the Dry Valley Drilling Project phases III, IV, V (1973-74, 1974-75, 1975-76) [1978, eng] **B-19980**
Ecological investigations of yeasts in antarctic soils [1978, eng] **B-20900**
Identification of some fungi from soil and air of Antarctica [1978, eng] **B-21352**
Campbell, D.J.
History and present status of goats on the Auckland Islands (New Zealand subantarctic) in relation to vegetation changes induced by man [1977, eng] **B-19806**
Case for controlling the distribution of the tree daisy *(Olearia lyallii)* Hook.f. in its type locality, Auckland Island [1976, eng] **B-20839**
Goats on Auckland Islands [1978, eng] **B-20903**
Campbell, I.B.
Development and significance of polygenetic features in antarctic soils [1977, eng] **E-20405**
Moraines of probable Miocene age, Dry Valleys, Antarctica [1978, eng] **E-20870**
Nature of the soil of Mars: evidence from Antarctica [1978, eng] **E-20871**
Campbell, L.
Microbial life beneath the Ross Ice Shelf [1978, eng] **B-21578**
Campbell, P.J.
Primary productivity of a hypersaline antarctic lake [1978, eng] **B-21350**
Campbell, W.J.
Integrated approach to the remote sensing of floating ice [1977, eng] **F-19861**
Ice sheet topography by satellite altimetry [1978, eng] **F-20414**
Cande, S.C.
Falkland escarpment and Agulhas fracture zone: the boundary between oceanic and continental basement at conjugate continental margins [1976, eng] **L-19513**
Capdevila, R.
1906—appointment of deputies for the antarctic islands and territories [1975, spa] **M-20252**
Caretta, G.
Microsporum magellanicum and *Cunninghamella antarctica*, new species isolated from Australic and antarctic soil of Chile [1977, eng] **B-19312**
Carlson, C.
Geological studies of the Dufek intrusion, Pensacola Mountains, 1976-1977 [1977, eng] **E-19650**

Carlucci, A.F.
Microbial distribution and activity in and around McMurdo Sound [1977, eng] **B-19613**
Microbial life beneath the Ross Ice Shelf [1978, eng] **B-21578**
Carmack, E.C.
Water masses and circulation in the Weddell Sea [1977, eng] **J-20029**
Antarctic Bottom Water formation in the Weddell Sea [1977, eng] **J-20030**
Formation and interleaving of abyssal water masses off Wilkes Land, Antarctica [1978, eng] **J-20161**
Water characteristics of the Southern Ocean south of the Polar Front [1977, eng] **J-21023**
Carpenter, D.L.
Siple/Roberval VLF transmitting experiments [1977, eng] **K-19711**
Outlying plasmasphere structure detected by whistlers [1976, eng] **K-20215**
Very low frequency radio waves in the magnetosphere [1978, eng] **K-20294**
New whistler evidence of a dynamo origin of electric fields in the quiet plasmasphere [1978, eng] **K-20501**
Initial results from a tracking receiver direction finder for whistler mode signals [1978, eng] **K-20502**
Whistlers and VLF noises propagating just outside the plasmapause [1978, eng] **K-20503**
Electron density in the plasmasphere: whistler data on solar cycle, annual, and diurnal variations [1978, eng] **K-20534**
Wave-induced particle precipitation effects at Siple Station [1978, eng] **K-21628**
Carroll, J.J.
Atmospheric processes and energy transfers at the South Pole [1977, eng] **I-19700**
Surface energy balance measurements at the South Pole [1976, eng] **I-21662**
Light intensity and polarization measurements at the South Pole [1976, eng] **K-21664**
Carter, A.N.
Phosphatic nodule beds in Victoria and the late Miocene-Pliocene eustatic event [1978, eng] **E-20961**
Carter, D.A.
Dual coherent auroral radar observations from Siple Station, Antarctica [1977, eng] **K-19713**
Cartwright, K.
Environmental appraisal for the Dry Valley Drilling Project phases III, IV, V (1973-74, 1974-75, 1975-76) [1978, eng] **B-19980**
Diamond drilling in environmentally sensitive areas—environmental impact: monitoring and assessment [1976, eng] **E-19463**
Cary, P.W.
Creep instability analysis of the Antarctic and Greenland ice sheets [1979, eng] **F-21317**
Casey, R.E.
Ecology and distribution of Recent radiolaria [1977, eng] **E-20567**
Cassidy, D.S.
USNS *Eltanin:* an inventory of core location data with core location maps and cruise 55 core descriptions [1977, eng] **E-19353**
ARA *Islas Orcadas* cruise 0775 sediment descriptions [1977, eng] **E-19354**
Core recovery: USNS *Eltanin* and ARA *Islas Orcadas* [1977, eng] **E-19639**
Antarctic Marine Geology Research Facility, 1976-1977 [1977, eng] **E-19645**
Basal sediment ages of Islas Orcadas cruise 11 piston-cores [1978, eng] **E-21559**
Distribution of manganese nodules with depth in sediments of the South Georgia Basin, Falkland (Malvinas) Plateau and adjacent areas [1978, eng] **E-21566**
Antarctic Marine Geology Research Facility, 1977-78 [1978, eng] **E-21639**
Cassidy, W.A.
Antarctica: a deep-freeze storehouse for meteorites [1977, eng] **E-19325**
Antarctic search for meteorites [1977, eng] **E-19654**
Antarctic search for meteorites during the 1977-78 field season [1978, eng] **E-21525**
Castellini, M.A.
Diving behavior of fur seals, *Arctocephalus gazella,* and king penguins, *Aptenodytes patagonica,* near South Georgia Island [1977, eng] **B-19596**
Blood characteristics related to oxygen carrying capacity in birds from South Georgia Island [1977, eng] **B-19602**
Catch (Wellington, New Zealand)
International interest in krill takes on keener edge with new developments [1978, eng] **A-21160**
Cathey, C.A.
Reconnaissance geologic map of the Boyd Glacier quadrangle, Marie Byrd Land, Antarctica [1977, eng] **E-19400**
Reconnaissance geological map of the Guest Peninsula quadrangle, Marie Byrd Land, Antarctica [1977, eng] **E-19401**
Caywood, L.P.
Sky-Hi Station report, Dec. 1961-Feb. 1962 [1962, eng] **K-19743**
Cazeneuve, H.
Ionosphere-magnetosphere coupling [1975, spa] **K-20257**
Cazeneuve, H.A.
Harmonic analysis of auroral pulsations [1978, eng] **K-20880**
Cekalovic, K.,T.
Catalog of the Arachnida: Scorpiones, Pseudoscorpiones, Opiliones, Acari, Araneae and Solifugae of the twelfth region of Magellanic Chile, including antarctic Chile [1976, spa] **B-20836**
Challies, C.N.
Feral pigs *(Sus scrofa)* on Auckland Island: status, and effects on vegetation and nesting sea birds [1975, eng] **B-20837**
Chamoux, J.-P.
Some international implications of iceberg transfer [1978, eng] **F-20481**
Chang, A.T.C.
Estimation of snow temperature and mean crystal radius from remote multispectral passive microwave measurements [1978, eng] **F-20801**
Microwave emission from polar firn [1978, eng] **F-21376**
Microwave brightness of polar firn as measured by Nimbus 5 and 6 ESMR [1978, eng] **F-21496**
Chang, D.C.D.
Transmitter simulation of power line radiation effects in the magnetosphere [1978, eng] **K-20997**
Siple/Roberval magnetospheric wave-wave interaction experiments [1978, eng] **K-21626**
Chappell, J.
Termination of last interglacial episode and the Wilson Antarctic surge hypothesis [1978, eng] **E-20008**
Theories of Upper Quaternary ice ages [1978, eng] **I-21112**
Charakhch'ian, A.N.
Cosmic-ray intensity in the near-earth atmosphere and at the surface of the earth [1975, eng] **K-21162**
Charakhch'ian, T.N.
Cosmic-ray intensity in the near-earth atmosphere and at the surface of the earth [1975, eng] **K-21162**
Effect of the total magnetic field of the sun on cosmic-ray modulation in the mid-latitude stratosphere [1978, eng] **K-21349**
Charcot, J.
Voyage of the *Pourquoi-pas:* the journal of the Second French South Polar Expedition, 1908-1910 [1978, eng] **D-20850**
Charles, G.
Payloads for Project ARAKS [1978, eng] **K-21409**
Chase, C.G.
Extension behind island arcs and motions relative to hot spots [1978, eng] **E-21053**
Chekunova, V.I.
Energetics of the Falkland sprat *Sprattus fuegensis* Jenyns [1977, rus] **B-21438**
Chen, P.-H.
Significance of the Pleistocene occurrence of Helotholus vema in high-latitude sediments [1977, eng] **E-20860**
Cherepanov, N.V.
Effect of coastal morphological features on the formation of underwater ice in antarctic seas [1977, eng] **F-19403**
Chernova, L.P.
Annotated list of Soviet literature on glaciology for 1975 [1978, rus] **F-21391**
Chernyĭ, E.I.
Influence of hydrologic conditions on the distribution of baleen whales in the Antarctic [1973, eng] **B-21199**
Chernysheva, S.P.
Phenomenon of sporadic E-layer conjugation [1976, eng] **K-21008**
Chesnokov, P.I.
Using dehydrated "Okean" protein paste in foods [1976, rus] **B-20821**
Chiang, E.
Central ice core storage facility and information exchange [1977, eng] **F-19693**
Design and operation of the ice core data bank [1976, eng] **F-20604**
Antarctic ice core recovery [1978, eng] **F-21539**

Chinn, T.J.
Hydrology-glaciology programme in Antarctica [1978, eng] **E-20309**
Chirivella, J.E.
Hydrodynamics of icebergs in transit [1978, eng] **F-20467**
Chivers, H.J.A.
High-latitude ionospheric absorption [1977, eng] **K-19719**
High-latitude ionospheric absorption [1978, eng] **K-21632**
Cho, H.Y.
Making decisions on iceberg utilization based upon multivariate utility theory: a case study in Saudi Arabia [1978, eng] **F-20475**
Choudbury, B.J.
Microwave brightness of polar firn as measured by Nimbus 5 and 6 ESMR [1978, eng] **F-21496**
Choudhury, B.J.
Microwave emission from polar firn [1978, eng] **F-21376**
Christ, P.
Antarctic meteorite Yamato 74123—a new ureilite [1978, eng] **E-20410**
Christians, O.
Experiments in making sausages from krill [1978, eng] **B-20526**
Quality and tastiness of antarctic fish [1977, ger] **B-20971**
Preliminary investigation of the effect of green stomach content of krill on the quality of cooked krill paste [1977, ger] **B-20977**
Processing and product development [1978, ger] **B-21451**
Processing of krill [1976, ger] **G-20967**
Method for the analysis of tissue-juice retention in cooked krill paste [1977, ger] **G-20973**
Christoffel, D.A.
Magnetic anomalies across Campbell Plateau, New Zealand [1978, eng] **L-21128**
Chudakov, V.I.
Antarctic ice sheet deformation [1978, rus] **F-20744**
Radio echo soundings within glaciological polygons [1978, rus] **F-20747**
Chudina, V.I.
Photosynthetic bacteria from Lake Vanda (Antarctica) [1978, eng] **B-21240**
Chukanin, K.I.
Some characteristics of atmospheric circulation and meteorological conditions in the Northern and Southern Hemispheres [1978, eng] **I-21341**
Chukanov, A.A.
Magnetic activity and subauroral ELF-VLF chorus [1975, eng] **K-21164**
Chun, S.
On the survival of organic compounds in the polar regions of Mars [1978, eng] **E-21093**
Church, F.W.
Radio communications for travellers on the Arctic Ocean [1978, eng] **G-20790**
Churkin, V.N.
Assessment of nuclear blast product transfer from the southern hemisphere to the northern in relation to radioisotope concentration in the atmosphere [1977, rus] **I-20694**
Ciesielski, P.F.
Geologic history of the Maurice Ewing Bank of the Falkland Plateau (southwest Atlantic sector of the Southern Ocean) based on piston and drill cores [1977, eng] **E-19263**
Biostratigraphy and paleoecology of Neogene and Oligocene silicoflagellates recovered from piston and drill cores off East Antarctica [1974, eng] **E-19282**
ARA *Islas Orcadas* cruise 0775 sediment descriptions [1977, eng] **E-19354**
Cretaceous *Islas Orcadas* core from the Falkland (Malvinas) Plateau, southwest Atlantic [1977, eng] **E-19635**
Late Mesozoic-Cenozoic history of the eastern Falkland (Malvinas) Plateau based on piston and drill cores [1977, eng] **E-19636**
Basal sediment ages of *Islas Orcadas* cruise 7 piston cores [1977, eng] **E-19637**
Paleoenvironmental analysis and correlation of a Cretaceous *Islas Orcadas* core from the Falkland Plateau, Southwest Atlantic [1977, eng] **E-20137**
Basal sediment ages of Islas Orcadas cruise 11 piston-cores [1978, eng] **E-21559**
Circum-Antarctic Marine Geology Symposium, Sydney, Australia, August 18-19, 1976
Circum-Antarctic marine geology [1977, eng] **E-19254**
Cisternas, R.
Wind chill index as applied to three Chilean antarctic bases [1972, spa] **I-19794**
Civiak, R.L.
Icebergs for use as freshwater [1978, eng] **F-20403**
Clapperton, C.M.
Scenery of the south: Falkland Islands, South Georgia, Subantarctic islands [1975, eng] **A-19370**
Claridge, G.G.C.
Development and significance of polygenetic features in antarctic soils [1977, eng] **E-20405**
Moraines of probable Miocene age, Dry Valleys, Antarctica [1978, eng] **E-20870**
Nature of the soil of Mars: evidence from Antarctica [1978, eng] **E-20871**
Clark, A.M.
Note on an echinoid from Gough Island, South Atlantic [1968, eng] **B-21063**
Clark, D.B.
Trace element chemistry of the Kirkpatrick basalt, Storm Peak, Central Transantarctic Mountains [1974, eng] **E-21483**
Clark, H.C.
Sediments and sediment processes on high latitude continental shelves [1977, eng] **E-19868**
Clarke, A.
Lipid class and fatty acid composition of *Chorismus antarcticus* (Pfeffer) (Crustacea: Decapoda) at South Georgia [1977, eng] **B-19471**
Contamination of Peregrine falcons *(Falco peregrinus)* with fulmar stomach oil [1977, eng] **B-19514**
Some observations on krill *(Euphausia superba* Dana) maintained alive in the laboratory [1976, eng] **B-19554**
Clarke, D.B.
Isochronous last-abundant-appearance datum (LAAD) of the diatom *Hemidiscus karstenii* in the sub-Antarctic [1978, eng] **E-19988**
Clarke, G.K.C.
Investigation of creep instability as a mechanism for glacier surges [1978, eng] **F-21203**
Creep instability analysis of the Antarctic and Greenland ice sheets [1979, eng] **F-21317**
Clarke, M.R.
Beaks, nets and numbers [1977, eng] **B-20554**
Clarke, R.
Sperm whales of the southeast Pacific. Part 3. Morphometry [1972, eng] **B-21267**
Clarkson, P.D.
Age and position of the Ellsworth Mountains crustal fragment, Antarctica [1977, eng] **E-20090**
Clausen, H.B.
Less surface accumulation on the Ross Ice Shelf than hitherto assumed [1977, eng] **F-20119**
Stable isotope profile through the Ross Ice Shelf at Little America V, Antarctica [1977, eng] **F-20125**
Clavier, B.
Study of the climate of the Kerguelen Islands and subantarctic region of the Indian Ocean. Climatology of Port-aux-Français [1977, fre] **I-19464**
Clayton, R.N.
Oxygen isotopes in several Yamato meteorites [1978, eng] **E-19931**
Clement, C.
Utilization of energy reserves during the breeding fast in the Emperor penguin, *Aptenodytes forsteri* [1976, fre] **B-19341**
Clough, J.W.
Ross Ice Shelf Project, 1976-1977 [1977, eng] **F-19347**
Ross Ice Shelf Project, 1976-1977 [1977, eng] **F-19685**
Dielectric permittivity of glacier ice measured *in situ* by radar wide-angle reflection [1978, eng] **F-21069**
Ross Ice Shelf Project [1979, eng] **F-21094**
Ross Ice Shelf Project 1977-78 [1978, eng] **F-21535**
Cluff, C.B.
Use of floating solar collectors in processing iceberg water [1978, eng] **F-20473**
Clynch, J.R.
Radio scintillation studies [1977, eng] **K-19723**
Cobb, W.E.
Atmospheric electric measurements at the South Pole: the krypton-85 question [1977, eng] **I-19698**
Atmospheric electric measurements at the South Pole [1976, eng] **1-21663**
Colbeck, S.C.
Creep rupture at depth in a cold ice sheet [1978, eng] **F-20981**
Colbert, E.H.
Cynodont reptiles from the Triassic of Antarctica [1977, eng] **E-19667**
Fossils and the drifting continents [1976, eng] **E-20846**
Proto-lizards from the Triassic of Antarctica [1978, eng] **E-21512**

Collen, J.D.
Biological observations from Black Island, Antarctica [1978, eng] **B-20592**
Collins, N.J.
Development of moss-peat banks in relation to changing climate and ice cover on Signy Island in the maritime Antarctic [1976, eng] **B-19552**
Collinson, J.W.
Stratigraphy and sedimentary petrology of the Fremouw Formation (Lower Triassic), Cumulus Hills, central Transantarctic Mountains [1978, eng] **E-21513**
Colombo, F.
The poles [1976, ita] **B-21382**
Comes, R.A.
Primary production in antarctic waters [1977, eng] **J-20039**
Condy, P.R.
Ross seal *Ommatophoca rossi* (Gray 1850), with notes from the results of surveys conducted in the King Haakon VII Sea, Jan./Feb. 1974-76 [1977, eng] **B-19461**
Results of the third seal survey in the King Haakon VII Sea, Antarctica [1976, eng] **B-19896**
Conger, S.D.
Test ultrastructure of some calcareous foraminifera [1977, eng] **E-19419**
Conklin, S.C.
Respiratory virus transmission at McMurdo Station: isolation of rhinoviruses from common colds during the winter fly-in period, 1976 [1977, eng] **H-19591**
Conolly, J.R.
Pleistocene manganese pavement production: its relationship to the origin of manganese in the Tasman Sea [1972, eng] **E-19377**
Conradi-Larsen, E.M.
Cold tolerance of two antarctic terrestrial arthropods [1978, eng] **B-21244**
Conroy, J.W.H.
Giant-petrels in the South Atlantic: new data from Gough Island [1976, eng] **B-19899**
Follow the band. Southern giant petrel 5022741 [1974, eng] **B-20357**
Constans, R.E.
Study of fluctuations in the carbonate compensation depth in the Southern Ocean south of Australia using calcareous nannofossils [1975, eng] **J-19274**
Cooke, W.J.
Tubinella funalis (Brady) as a sessile form, with notes on its distribution and wall structure [1978, eng] **B-20539**
Cooper, J.
Seasonal and spatial distribution of the Antarctic Tern in South Africa [1976, eng] **B-19903**
Cooper, R.A.
Late Cambrian Brachiopoda, Mollusca, and Trilobita from northern Victoria Land, Antarctica [1976, eng] **E-20142**
Copin-Montegut, C.
Chemistry of particulate matter from the south Indian and Antarctic oceans [1978, eng] **J-21397**
Copin-Montegut, G.
Chemistry of particulate matter from the south Indian and Antarctic oceans [1978, eng] **J-21397**
Copson, G.R.
Corybas macranthus (Hook.f.) Reichb.f. (Orchidaceae), a new record for Macquarie Island [1978, eng] **B-21284**
Corcuff, P.
Methods of whistler analysis. Pt.2. Application to whistlers observed on the ground [1977, fre] **K-20840**
Corcuff, Y.
Methods of whistler analysis. Pt.2. Application to whistlers observed on the ground [1977, fre] **K-20840**
Corliss, B.H.
Studies of deep-sea benthonic foraminifera in the southeast Indian Ocean [1978, eng] **E-21570**
Cosgriff, J.W.
New Triassic vertebrates from the Fremouw Formation of the Queen Maud Mountains [1978, eng] **E-21514**
Cotin, F.
Electron spectrometers for the study of artificially injected particles during the ARAKS experiments [1978, eng] **K-21414**
Coudert, Y.
Phylica nitida on Amsterdam Island [1976, fre] **B-20346**
Coulson, K.L.
Atmospheric processes and energy transfers at the South Pole [1977, eng] **I-19700**
Polarizing radiometer measurements of skylight at South Pole station, Antarctica [1977, eng] **I-20899**
Surface energy balance measurements at the South Pole [1976, eng] **I-21662**
Light intensity and polarization measurements at the South Pole [1976, eng] **K-21664**
Cousteau, J.
Reasonable utopias [1976, eng] **A-20929**
Couté, A.
Freshwater algae from Crozet and Kerguelen Islands (excluding diatoms). 2. Examination of specimens taken in 1973 and 1974 [1977, fre] **B-20930**
Covacevich, V.
Valanginian fauna in the Byers Peninsula, Livingston Island [1976, spa] **E-21085**
Cox, A.
Absolute motion of an individual plate estimated from its ridge and trench boundaries [1978, eng] **E-20570**
Cox, K.G.
Flood basalts, subduction and the break-up of Gondwanaland [1978, eng] **E-20404**
Craddock, C.
Geology of the Ellsworth Mountains to Thiel Mountains ridge [1977, eng] **E-19646**
Antarctica and Gondwanaland [1978, eng] **E-20201**
Earth science investigations in the United States Antarctic Research Program (USARP) for the period July 1, 1977 - June 30, 1978 [1978, eng] **E-20561**
Plutonic rocks from the Ruppert Coast, West Antarctica [1978, eng] **E-21500**
Cragin, J.H.
Interhemispheric comparison of changes in the composition of atmospheric precipitation during the Late Cenozoic era [1977, eng] **F-20045**
Chemistry of 700 years of precipitation at Dye 3, Greenland [1975, eng] **F-20599**
Craig, H.
Three-dimensional modeling of tracers in the deep Pacific Ocean: 1. Salinity and oxygen [1978, eng] **J-20185**
Crane, H.R.
University of Michigan radiocarbon dates XII [1968, eng] **B-19843**
Crawford, L.T.
"Uruguayan Flag at the Pole" from the 60th parallel to the Antarctic [1976, spa] **A-20192**
Creighton, D.F.
Detecting geomagnetic pulsations using a solenoid with a ferrite core [1978, eng] **K-21021**
Cresswell, G.R.
Buoy and ship examination of the subtropical convergence south of Western Australia [1978, eng] **J-21233**
Crisler, K.
Resource and radioactivity survey in southern Victoria Land [1977, eng] **E-19663**
Cronan, D.S.
Regional geochemistry of ferromanganese nodules in the world ocean [1972, eng] **E-19376**
Cronblad, H.G.
Planktonic foraminiferal dissolution at high latitudes of the southwestern Atlantic [1978, eng] **E-21565**
Cronk, C.
Glaciological investigations near the ice sheet margin, Wilkes Station, Antarctica [1968, eng] **F-19569**
Crooker, A.R., Jr.
First record of *Ereynetes macquariensis* (Acarina: Ereynetidae) from Anvers Island, Antarctic Peninsula [1977, eng] **B-19378**
Croom, J.M.
Systematics and ecology of ciliated protozoa from King George Island, South Shetland Islands [1978, eng] **B-21149**
Crowell, J.C.
Gondwanan glaciation, cyclothems, continental positioning, and climate change [1978, eng] **E-21005**
Crutcher, H.L.
Climate of the upper air: Southern Hemisphere. Vol.3. Vector mean geostrophic winds: isogon and isotach analyses [1971, eng] **I-20140**
Cullen, D.J.
Potassium-argon ages of granites and metasediments from the Bounty Islands area, southwest Pacific Ocean [1978, eng] **E-20541**
Cullen, M.
Mount Erebus [1978, eng] **E-20311**
Vanda Station—oasis in dry valleys [1978, eng] **G-20313**

Cunningham, W.C.
Trace elements in the antarctic atmosphere [1978, eng] **I-21616**
Czamanske, G.K.
Geological studies of the Dufek intrusion, Pensacola Mountains, 1976-1977 [1977, eng] **E-19650**
Czeczuga, B.
Carotenoids in fish. 14. The carotenoid content in the flesh of certain species from the Antarctic [1978, eng] **B-21237**
Czubasiewicz, B.
To Antarctica on the *Tazar* [1977, pol] **A-20166**
D'Agostino, M.M.
Antarctic echinoderms. III. Ophiuroidea 1. Ophiuroidea of the extreme north of the Antarctic Peninsula [1974, spa] **B-19332**
New species of antarctic ophiuroid: *Ophiurolepis granulifera* sp. nov. (Ophiuroidea, Ophiuridae) [1977, spa] **B-19573**
New species of antarctic ophiuroid: *Ophiomastus trispinosus* sp. nov. (Ophiuroidea, Ophiuridae) [1977, spa] **B-21430**
Dailey, M.D.
Disease as a cause of natural mortality in some antarctic whale stocks and parasites as potential biological tags [1977, eng] **B-19594**
Dalinger, R.E.
Antarctic ice and history of world climate [1975, spa] **F-20260**
Dalziel, I.W.D.
Geologic studies in the South Orkney Islands: R/V *Hero* Cruise 77-1, January 1977 [1977, eng] **E-19655**
Destruction of the Early Cretaceous marginal basin in the Andes of Tierra del Fuego [1977, eng] **E-21116**
Sub-antarctic islands [1975, eng] **E-21286**
Geochemistry of Mesozoic marginal basin floor igneous rocks from southern Chile [1979, eng] **E-21319**
Progressive deformation and orogenic uplift at the southern extremity of the Andes [1979, eng] **E-21320**
Fossil marginal basin in the southern Andes [1974, eng] **E-21327**
Marginal basin "rocas verdes" complex from S. Chile: a model for Archaean greenstone belt formation [1976, eng] **E-21332**
Scotia Arc Tectonics Project, 1977-78 [1978, eng] **E-21503**
Dalziel, M.C.
Geochemistry of antarctic sediments with emphasis on the distribution of barium [1975, eng] **E-19283**
Dangeard, L.
Outcrops, currents and facies in the east Pacific antarctic zone (Bellingshausen and Amundsen seas) [1977, fre] **J-20863**
D'Angelo, N.
On high-latitude CNA, G-lacuna and SEC [1978, eng] **K-20099**
Daniels, R.A.
Predation on foraminifera by antarctic fish [1978, eng] **B-20536**
Nesting behaviour of *Harpagifer bispinis* in Arthur Harbour, Antarctic Peninsula [1978, eng] **B-20546**
Dansgaard, W.
Less surface accumulation on the Ross Ice Shelf than hitherto assumed [1977, eng] **F-20119**
Stable isotope variations in snow and ice at Vostok, Antarctica [1977, eng] **F-20121**
Stable isotope profile through the Ross Ice Shelf at Little America V, Antarctica [1977, eng] **F-20125**
Dartnall, H.J.G.
Antarctic freshwater rotifers [1977, eng] **B-20785**
Biology of an antarctic aquatic moss community [1978, eng] **B-21289**
Davey, F.J.
Campbell Plateau and its relationship with the Ross Sea, Antarctica [1977, eng] **E-19258**
Marine seismic measurements in the New Zealand region [1977, eng] **L-20014**
Magnetic anomalies across Campbell Plateau, New Zealand [1978, eng] **L-21128**
Davies, G.F.
Roles of boundary friction, basal shear stress and deep mantle convection in plate tectonics [1978, eng] **E-20182**
Davies, H.C.
Climatic change, orography and geostrophic motion [1975, eng] **I-19414**
Davies, T.A.
Indian Ocean sediment distribution since the Late Jurassic [1978, eng] **E-19876**
Davis, R.W.
Diving behavior of fur seals, *Arctocephalus gazella*, and king penguins, *Aptenodytes patagonica*, near South Georgia Island [1977, eng] **B-19596**
Blood characteristics related to oxygen carrying capacity in birds from South Georgia Island [1977, eng] **B-19602**
Davis, T.A.
Osmotic propulsion of icebergs [1978, eng] **F-20469**
Day, C.F.
Cost of U.S. antarctic research [1971, eng] **G-19960**
Dayton, P.K.
Processes organizing contrasting benthic communities of McMurdo Sound [1977, eng] **B-19608**
Long-term experimental benthic studies in McMurdo Sound [1978, eng] **B-21583**
Dayton, R.B., Jr.
Polar icebreaker preliminary structural design and special studies [1968, eng] **G-21206**
De Blij, H.J.
Regional geography of Antarctica and the Southern Ocean [1978, eng] **M-21469**
De Villiers, A.F.
Littoral ecology of Marion and Prince Edward Islands (Southern Ocean) [1976, eng] **B-20835**
De Wit, M.J.
Evolution of the Scotia Arc as a key to the reconstruction of southwestern Gondwanaland [1977, eng] **E-19316**
Deformation, serpentinization and emplacement of a dunite complex, Gibbs Island, South Shetland Islands: possible fracture zone tectonics [1977, eng] **E-19322**
Fossil marginal basin in the southern Andes [1974, eng] **E-21327**
Model for ocean-floor metamorphism, seismic layering and magnetism [1976, eng] **E-21328**
Igneous and metamorphic processes associated with the formation of Chilean ophiolites and their implication for ocean floor metamorphism, seismic layering, and magnetism [1976, eng] **E-21330**
Marginal basin "rocas verdes" complex from S. Chile: a model for Archaean greenstone belt formation [1976, eng] **E-21332**
Field and geochemical data bearing on the development of a Mesozoic volcano-tectonic rift zone and back-arc basin in southernmost South America [1978, eng] **E-21333**
Pillow talk [1978, eng] **E-21334**
Deacock, W.
Big Ben—a sub-antarctic peak [1963, eng] **A-21720**
Deacon, G.E.R.
Antarctic water masses and circulation [1977, eng] **J-20023**
Seasonal and annual variations in water temperature and salinity near South Georgia, 1925-1937 [1977, eng] **J-20617**
Dearborn, J.H.
Ecology of benthic fishes and echinoderms along the Scotia Arc and the Antarctic Peninsula [1977, eng] **B-19607**
Organic and inorganic composition of post-metamorphic growth stages of *Ophionotus hexactis* (E.A. Smith) (Echinodermata: Ophiuroidea) during intraovarian incubation [1979, eng] **B-21174**
Benthic fishes and echinoderms in the Scotia Arc region [1978, eng] **B-21584**
Decker, E.R.
Geothermal studies in Antarctica [1977, eng] **E-19657**
Deevey, G.B.
Taxonomic and distributional study of the planktonic ostracods collected on three cruises of the *Eltanin* in the South Pacific and the antarctic region of the South Pacific [1978, eng] **B-20853**
DeFelice, D.R.
Basal sediment ages of ARA *Islas Orcadas* cruise 12 piston cores [1978, eng] **E-21560**
Amino acid racemization in *Islas Orcadas* piston core 12-77-24 [1978, eng] **E-21561**
Structure of the Middle Miocene antarctic diatom species *Denticula antarctica* McCollum [1978, eng] **E-21569**
Degaonkar, S.S.
Origin of annual and subannual periodicities in F region ionization [1978, eng] **K-20530**
DeLaca, T.E.
Ross Ice Shelf Project—benthic biology, 1976-1977 [1977, eng] **B-19614**
Life below the Ross Ice Shelf, Antarctica [1979, eng] **B-21101**
Miocene glaciomarine sediments from beneath the southern Ross Ice Shelf, Antarctica [1979, eng] **E-21095**
Miocene glaciomarine sediments from site J-9, Ross Ice Shelf, Antarctica [1978, eng] **E-21573**
Sediments and life under the Ross Ice Shelf (J-P), Antarctica [1978, eng] **E-21586**

Delach, M.N.
Distribution of ferromanganese deposits in the World Ocean [1972, eng] **E-19375**
Delahaye, J.Y.
Wave measurements in the ARAKS experiment [1978, eng] **K-21412**
Delazari, V.D.
Basic reading list on penguins (1954-1974) [1977, rus] **B-19542**
Delépine, G.
Voyages to the Kerguelens from the time of their discovery until their becoming a territory [1976, fre] **D-20348**
Delibrias, G.
Gif natural radiocarbon measurements VI [1972, eng] **I-19845**
Delmas, R.
Composition of gas contained in polar ice [1977, fre] **F-20129**
Sulfate in antarctic snow: spatio-temporal distribution [1978, eng] **F-20505**
Potentiometric microdetermination of sulfate ions [1978, fre] **F-21159**
DeMaster, D.
Colonial behavior of antarctic marine mammals in eastern McMurdo Sound [1977, eng] **B-19597**
Colonial behavior of the Weddell seal in eastern McMurdo Sound [1978, eng] **B-21599**
DeMaster, D.P.
Analysis of the dynamics of a Weddell seal population [1977, eng] **B-19751**
Demidova, N.V.
Peripheral blood indicators in wintering 15th SAE personnel at Vostok [1977, rus] **H-21141**
Demin, IU.L.
Structure of large-scale circulation of Atlantic Ocean waters [1977, eng] **J-19741**
Denisov, A.S.
Ice conditions encountered by the research vessel *Professor Zubov* (Dec. 1972-Mar. 1973) [1978, rus] **F-20737**
Features of the oceanographic regime in Prydz Bay (Feb. 1973) [1978, rus] **J-20740**
Denner, W.W.
Environmental factors along an iceberg tow route in the Indian Ocean [1978, eng] **F-20471**
Denton, G.
Fresh-water diatoms from perched deltas in Taylor Valley, Antarctica [1978, eng] **E-21517**
Denton, G.H.
Marine microfossils on the McMurdo Ice Shelf [1977, eng] **E-19644**
Glacial geologic studies in the McMurdo Sound region [1978, eng] **E-21528**
Glacier history of the McMurdo Sound region [1977, eng] **F-19676**
Denys, C.J.
Antarctic marine living resources with special reference to krill *Euphausia superba:* assessment of adequacy of present knowledge [1978, eng] **B-21492**
Biological studies of antarctic krill, austral summer, 1977-1978 [1978, eng] **B-21581**
Derenne, P.
Craniometric data on wild rabbits and feral cats of Hog Island, Crozet Archipelago [1976, fre] **B-19506**
Notes on the biology of the feral cat in the Kerguelen Islands [1976, fre] **B-19507**
Note on the ringing of birds in the Kerguelen archipelago since 1951 [1972, fre] **B-20897**
Deriapa, N.R.
Problems of adaptation and antarctic support systems [1978, rus] **H-21032**
Human adaptation and health in Antarctica [1978, rus] **H-21707**
Desko, D.A.
Air operations, *Deep Freeze* '77 [1977, eng] **G-19731**
Despin, B.
Comparative growth of penguin chicks in the genus *Pygoscelis* [1977, fre] **B-19382**
Preliminary note on the Gentoo penguin *Pygoscelis papua* of Possession Island (Crozet archipelago) [1972, fre] **B-20895**
Detrick, D.
Precipitating electrons observed from balloons launched near the conjugate point of Siple Station, Antarctica [1978, eng] **K-21624**
Detrick, D.L.
High time resolution riometer studies of magnetospheric electron precipitation [1978, eng] **K-21623**
Devine, M.
Dynamics of the Antarctic Circumpolar Current [1969, eng] **J-19390**
DeVries, A.L.
Freezing resistance in some Antarctic fishes [1968, eng] **B-19272**
Role of glycoprotein and peptide antifreezes in the survival of polar fishes [1977, eng] **B-19606**
Lipid sacs as a buoyancy adaptation in an antarctic fish [1978, eng] **B-19906**
Adsorption inhibition as a mechanism of freezing resistance in polar fishes [1977, eng] **B-20021**
Physiology of cold adaptation in polar marine poikilotherms [1977, eng] **B-20041**
Physiology and biochemistry of low temperature adaptations in polar marine ectotherms [1978, eng] **B-20206**
Antifreeze glycoprotein biosynthesis in antarctic fishes [1979, eng] **B-21217**
DeWitt, H.H.
Revision of the Antarctic and southern genus *Notothenia* (Pisces, Nototheniidae) [1966, eng] **B-19391**
Ecology of benthic fishes and echinoderms along the Scotia Arc and the Antarctic Peninsula [1977, eng] **B-19607**
Di Menna, M.E.
Ecological investigations of yeasts in antarctic soils [1978, eng] **B-20900**
D'iachkov, V.A.
Circadian rhythm in human blood circulation in Antarctica [1978, rus] **H-21039**
Dick, E.C.
Respiratory virus transmission at McMurdo Station: isolation of rhinoviruses from common colds during the winter fly-in period, 1976 [1977, eng] **H-19591**
Lack of increased susceptibility to colds in the McMurdo winter parties of 1975 and 1976 [1977, eng] **H-19592**
Colds and immunity in the 77 winter personnel at McMurdo Station and Scott Base, 1976 [1977, eng] **H-19593**
Respiratory virus transmission at McMurdo Station and Scott Base (New Zealand) during the winter fly-in period, 1977 [1978, eng] **H-21606**
Dick, H.
Tectonic structure and petrology of the antarctic plate boundary near the Bouvet triple junction [1978, eng] **E-19869**
Dickson, C.R.
Atmospheric trace gases in the southern hemisphere [1973, eng] **I-19484**
Dietrich, R.
Measurements of a barometric altitude profile in Enderby Land, Antarctica [1975, ger] **C-19502**
Studies of barometric leveling in Antarctica [1975, ger] **C-19505**
Dirkx, J.
Penguin hemoglobin *(Aptenodytes forsteri).* A 45 residue N-terminal sequence [1973, eng] **B-19394**
Dittrich, G.
Geodetic and meteorologieal investigations of ground refraction over antarctic continental ice [1978, rus] **C-21463**
Diurgerov, M.B.
Glaciological studies on the IAGP program in a new area of Eastern Antarctica [1977, rus] **F-20172**
Dmitrash, Zh.A.
New data on the physics of antarctic sea ice [1968, eng] **F-20331**
Results of iceberg observations [1968, eng] **F-20333**
Dmitriev, D.N.
Deformation of the sides of a deep borehole in the antarctic ice cover at Vostok Station [1978, rus] **F-20725**
Doake, C.S.M.
Dissipation of tidal energy by antarctic ice shelves [1978, eng] **F-20704**
Dobeš, K.
Method of locating the Pc1 source and hot plasma parameters in the generation region [1979, eng] **K-21381**
Dodge, E.S.
Polar Rosses: John and James Clark Ross and their explorations [1973, eng] **A-19493**
Dodson, R.H.T.
Icebergs to Arabia [1978, eng] **F-20713**
Doering, J.P.
Observations of low-energy electrons from AE-C in the south polar cusp during the geomagnetic storm of September 21, 1977 [1978, eng] **K-21353**
Doggett, M.C.
Pseudo-vivipary in Fuegian and Falkland Islands grasses [1976, eng] **B-19553**

Doisy, P.
Visual observations of auroras: Dumont d'Urville Base [1977, fre] K-19739
Dokukin, V.S.
Payloads for Project ARAKS [1978, eng] K-21409
Dolganov, L.V.
Time limit for outdoor activity in Antarctica as a function of wind speed and air temperature [1978, rus] H-21046
Dominas, H.
Chemical composition of the antarctic Amphipoda *Paramoera walkeri* Stebbing and chromatographic analysis of its lipids [1974, eng] B-20219
Donaldson, P.B.
Melting of antarctic icebergs [1978, eng] F-20705
Donets, E.G.
Results of aerogravimetric studies in Antarctica [1975, rus] L-20382
Donnou, D.
905-meter deep core drilling at dome C (East Antarctica) and related surface programs [1978, eng] F-21532
Dool, H.M. van den
Energy balance climate models: stability experiments with a refined albedo and updated coefficients for infrared emission [1978, eng] I-19990
Doolittle, J.H.
Initial results from a tracking receiver direction finder for whistler mode signals [1978, eng] K-20502
Wave-induced particle precipitation effects at Siple Station [1978, eng] K-21628
Doronin, IU.P.
Sea ice [1977, eng] F-19333
Dorrzapf, A.
Geochemistry of the fine size fraction of bottom sediments from the southern Argentine shelf [1978, eng] E-21577
Dowden, R.L.
Micropulsations observed by whistler-mode transmissions [1978, eng] K-20979
Dowdle, E.B.
Effect of prolonged isolation from environmental allergens on the clinical and laboratory manifestations of the allergic state [1977, eng] H-19449
Dreĭer, N.N.
Program and instructions on the compilation of the world atlas of snow and ice resources [1977, rus] F-19577
Dreschhoff, G.
Resource and radioactivity survey in southern Victoria Land [1977, eng] E-19663
Gamma ray activity from radioactive fallout at the South Pole [1978, eng] I-21620
Dressler, K.
Photogrammetric studies of a group from the G.D.R. during the 17th Soviet Antarctic Expedition [1975, ger] C-19503
"Mountains of German-Soviet friendship" in Enderby Land (Antarctica) [1977, ger] C-21083
Some problems of photogrammetry in Antarctica [1976, eng] C-21393
Flow rate and ice discharge of the Hays, Campbell and Assender Glaciers, Enderby Land, Antarctica [1977, ger] F-21156
Drewry, D.J.
Uncertain future of the Falkland Islands [1977, eng] A-19336
Amundsen's route to the South Pole [1979, eng] A-21717
International studies of ice sheet and bedrock [1977, eng] F-20279
Radio echo sounding of the antarctic ice sheet, 1977-78 [1978, eng] F-21533
Antarctic airborne radio echo sounding, 1977-78 [1978, eng] G-21152
Driatskiĭ, V.M.
Results and prospects of Soviet geophysical research in the Antarctic [1978, rus] L-20675
Druzhinin, E.I.
Summer turbulent atmosphere-ocean exchange in the Drake Passage in 1976 [1978, rus] I-20643
Dry Valley Drilling Project (DVDP). Bulletin
Dry Valley Drilling Project (DVDP) Seminar-III, June 5-10, 1978 [1978, eng] E-20362
Duarte, W.E.
Distribution and spatial segregation of fish populations in South Bay, Doumer Island, Antarctic [1977, spa] B-20911
Dubov, A.S.
Methods and results of the gradient and micropulsation measurements of air temperature and wind velocity [1977, rus] I-20427
Dubovtsev, V.F.
Conditions for ship unloading near Novolazarevskaya Station [1977, rus] G-19887
Dubrovin, L.I.
Soviet research in the Antarctic [1977, rus] A-20191
Twenty years of Soviet research in the Antarctic [1978, rus] A-21686
Russian names in Antarctic toponymy [1978, rus] A-21705
Duce, R.A.
Trace metals in the antarctic atmosphere [1974, eng] I-20224
Trace elements in the antarctic atmosphere [1978, eng] I-21616
Iodine, bromine and chlorine in the antarctic atmosphere [1976, eng] I-21665
Atmospheric concentrations and sources of trace metals at the South Pole [1976, eng] I-21673
Dudeney, J.R.
Radio wave Doppler studies of the antarctic ionosphere [1977, eng] K-19478
Simultaneous occurrence of short period ionospheric and magnetic oscillations in Antarctica [1977, eng] K-19716
Antarctic ionospheric research [1978, eng] K-20298
Dudley-Hart, P.
Improvement of scientific systems aboard ARA *Islas Orcadas* [1977, eng] G-19727
Duggal, S.P.
Cosmic ray intensity variations [1977, eng] K-19722
Symmetrical equator-pole anisotropy during an unusual cosmic ray storm [1978, eng] K-20628
Cosmic ray intensity variations [1978, eng] K-21635
Dugger, J.A.
Exploiting antarctic mineral resources—technology, economics, and the environment [1978, eng] A-21470
Dujardin, J.L.
Study of the climate of the Kerguelen Islands and subantarctic region of the Indian Ocean. Climatology of Port-aux-Français [1977, fre] I-19464
Dulong, F.T.
Geochemistry of the fine size fraction of bottom sediments from the southern Argentine shelf [1978, eng] E-21577
Dunbar, M.J.
Polar oceans [1977, eng] J-20022
Dunnet, G.M.
Place of the Antarctic in biological sciences [1977, eng] B-20276
Duplessy, J.C.
Carbon isotope ratio of marine plankton related to surface water masses [1978, eng] B-20959
Oceanographic activities in the French austral and antarctic territories [1976, fre] D-20349
Isotope studies [1978, eng] I-21188
Duran, A.M.
Orogenic volcanism in Southern Chile [1976, sp] E-21331
Dusmukhamedov, N.S.
Identification and biological characteristics of strains of psychrophilic bacteria isolated in diarrhea of polar workers and from antarctic lake water [1978, eng] H-21427
Dutch, S.
Deformation, serpentinization and emplacement of a dunite complex, Gibbs Island, South Shetland Islands: possible fracture zone tectonics [1977, eng] E-19322
Duthie, D.D.
Aurorae and closed magnetic field lines [1977, eng] K-19804
Dütsch, H.U.
Vertical ozone distribution on a global scale [1978, eng] I-21482
Duval, P.
Anelastic behaviour of polycrystalline ice [1978, eng] F-21070
Dykins, J.E.
Ice engineering—tensile properties of sea ice grown in a confined system [1970, eng] F-21207
Dzerzhinskiĭ, F.IA.
Functional morphology of feeding apparatus in penguins [1977, rus] B-19534
Dzhordzhio, N.V.
High-latitude ionospheric inhomogeneities according to measurements on Kosmos 348 [1976, eng] K-21168
Eadie, B.J.
C-13 change analysis of oceanic particulate organic matter [1973, eng] J-20270
Some observations on the stable carbon isotope composition of dissolved and particulate organic carbon in the marine environment [1978, eng] J-20579
Early, J.W.
New Diapriinae (Hymenoptera: Diapriidae) from the South Island and Subantarctic islands of New Zealand [1978, eng] B-20543

Eastin, R.
Geochronology of the basement rocks of the central Transantarctic Mountains, Antarctica [1970, eng] **E-19470**
Eastman, J.T.
Lipid sacs as a buoyancy adaptation in an antarctic fish [1978, eng] **B-19906**
Eather, R.H.
Optical diagnostics of the August 1972 PCA event [1976, eng] **K-20509**
Eberhardt, L.L.
Problems in the conservation of polar marine mammals [1978, eng] **B-20205**
Echols, R.J.
Distribution of foraminifera and radiolaria in sediments of the Scotia Sea area, Antarctic Ocean [1967, eng] **B-19519**
Ecklund, W.L.
Dual coherent auroral radar observations from Siple Station, Antarctica [1977, eng] **K-19713**
Eckman, J.F.
Ship operations, *Deep Freeze* '77 [1977, eng] **G-19734**
Ship operations, *Deep Freeze* 78 [1978, eng] **G-21645**
Economist (London)
Invasion postponed [1975, eng] **M-21273**
British we remain? [1968, eng] **M-21366**
Lord Chalfont's islands [1968, eng] **M-21367**
Baa, baa [1968, eng] **M-21368**
Eddie, G.O.
Harvesting of krill [1977, eng] **B-20002**
Edds, P.
Bibliography of antarctic krill [1977, eng] **B-20242**
Edgar, A.T.
Classified summarised notes [1977, eng] **B-19908**
Edholm, O.G.
Energy balance in man [1977, eng] **H-20143**
Edmond, J.M.
Distribution of dissolved copper in the Pacific [1977, eng] **J-19323**
Edwards, G.
Bird observations in the Weddell Sea [1970, eng] **B-20384**
Edwards, J.S.
Physiological basis of low temperature tolerance in antarctic insects [1978, eng] **B-21603**
Efimov, V.A.
Global atmospheric circulation as an oscillatory process and study of its characteristics using POLEX data [1977, eng] **I-19786**
Full-scale and model studies of nonlinear factors in baroclinic motion: a problem for the POLEX-South program [1977, eng] **I-19790**
Eger, R.
Survey of a traverse on the Antarctic inland ice [1975, ger] **C-19501**
Egorova, L.N.
Amino acid content of krill and krill meal [1970, rus] **B-20819**
Ekdahl, C.A.
Atmospheric carbon dioxide and radiocarbon in the natural carbon cycle. I. Quantitative deductions from records at Mauna Loa Observatory and at the South Pole [1973, eng] **I-20069**
El Kassas, I.A.
Potential application of remote sensing in locating and tracking of antarctic icebergs [1978, eng] **F-20458**
El-Sayed, S.Z.
Phytoplankton studies in the water column and in the pack ice of the Weddell Sea [1977, eng] **B-19616**
Productivity of the antarctic and tropical/subtropical regions: a comparative study [1977, eng] **B-20043**
Primary productivity and estimates of potential yields of the Southern Ocean [1978, eng] **B-20204**
BIOMASS [1978, eng] **B-21082**
Biogeography and metabolism of phytoplankton and zooplankton in the Ross Sea, Antarctica [1978, eng] **B-21580**
Elderfield, H.
Geochemistry of basalt-sea-water interactions: evidence from Deception Island, Antarctica, and Reykjanes, Iceland [1977, eng] **E-20618**
Eldridge, J.
Colonial behavior of the Weddell seal in eastern McMurdo Sound [1978, eng] **B-21599**
Elliot, D.H.
Bird and seal observations at Joinville Island and offshore islands [1978, eng] **B-21595**
Biostratigraphy of Seymour Island, Antarctica [1978, eng] **E-19939**
Geologic studies in the northern Antarctic Peninsula, R/V Hero cruise 78-1B, February 1978 [1978, eng] **E-21505**
Elliott, D.
Ross Ice Shelf Project environmental impact statement July, 1974 [1978, eng] **B-19979**
Elston, D.P.
Polarity zonations, magnetic intensities, and the correlation of Miocene and Pliocene DVDP cores, Taylor Valley, Antarctica [1978, eng] **L-20364**
Elthon, D.
Metamorphic petrology of the Sarmiento ophiolite complex, Chile [1978, eng] **E-21287**
Embleton, B.J.J.
Revised palaeomagnetic data for the Australian Mesozoic and a synthesis of late Palaeozoic-Mesozoic results for Gondwanaland [1977, eng] **L-20217**
Emelianov, E.M.
Geochemistry of sediments in the western central Atlantic, DSDP Leg 39 [1977, eng] **E-19849**
Emel'ianov, V.V.
Investigating atmospheric aerosol transfer by means of geochemical study of the antarctic ice sheet [1976, rus] **F-19285**
Emery, W.J.
Antarctic Polar Frontal Zone from Australia to the Drake Passage [1977, eng] **J-19320**
Soviet-American research aboard RV *Professor Zubov* [1977, eng] **J-19627**
Temperature sections from supply vessels [1977, eng] **J-19629**
Variability of the antarctic polar frontal zone in the Drake Passage—summer 1976-1977 [1978, eng] **J-20532**
Cyclonic eddy in the Antarctic Circumpolar Current south of Australia: results of Soviet-American observations aboard the R/V *Professor Zubov* [1978, eng] **J-20553**
Eddies and ridges in the thermal structure south of New Zealand [1978, eng] **J-21550**
Endo, Y.
Chemical analysis of soil in East Ongul Island, Antarctica [1977, jap] **E-19295**
Sulfur dioxide and fall dust during summer season at Syowa Station, Antarctica [1977, jap] **I-19291**
England, A.W.
Geophysical studies of the Dufek intrusion, Pensacola Mountains, Antarctica, 1976-1977 [1977, eng] **L-19651**
Englebretson, R.E.
Operational meteorology, *Deep Freeze* '77 [1977, eng] **I-19735**
Ergin, M.
Glasgow University radiocarbon measurements II [1970, eng] **I-19844**
Erickson, A.W.
Body size and composition of Crabeater seals *(Lobodon carcinophagus)*, with observations on tissue and organ size in Ross seals *(Ommatophoca rossi)* [1976, eng] **B-19995**
Erlank, A.J.
Geology and geochemistry of Bouvet Island [1976, eng] **E-20146**
Ervin, C.P.
Ground magnetic studies of volcanic rocks in the Taylor and Wright Valleys region [1977, eng] **E-19659**
Eskin, L.I.
Dynamics of the Balleny ice ridge [1978, rus] **F-20762**
Ice conditions in the Leningradskaya Station area [1978, rus] **F-20763**
Esser, A.C.
Contractor support [1978, eng] **G-21646**
Essex, E.A.
High to low latitude variations in the evening summer total electron content and F-region electron density [1977, eng] **K-19872**
Etchegaray, J.
Analysis of relationships among antarctic mesofauna and various climatic factors [1977, spa] **B-20910**
Evans, C.
Magnetic fluctuations and ionosphere conductivity changes measured at Siple Station [1977, eng] **K-19715**
Association of ULF magnetic variations and changes in ionospheric conductivity during substorms [1978, eng] **K-20531**
Evdokimov, V.V.
Human immunology under antarctic conditions [1978, rus] **H-21708**
Evdokimova, L.V.
Electric field of polar caps under the assumption that the magnetopause is an anisotopic rotational discontinuity [1975, eng] **K-21163**
Everson, I.
Antarctic marine secondary production and the phenomenon of cold adaptation [1977, eng] **B-19473**
Record of *Mytilus edulis* L. from South Georgia [1976, eng] **B-19563**

Living resources of the Southern Ocean [1977, eng] B-20001
Antarctic fisheries [1978, eng] B-21151

Evlashin, L.S.
High sensitivity optical equipment for detection of weak luminous objects [1978, eng] K-21422

Fahy, F.W.
Aluminium corrosion assessment in Antarctica [1978, eng] G-20874

Fain, A.
Mites collected by J. Travé in the subantarctic islands, 2. Families Acaridae, Anoetidae, Ereynetidae, and Tarsonemidae (Astigmata and Prostigmata) [1976, fre] B-20056

Fairall, N.
Notes on seabirds at Gough Island [1976, eng] B-19900

Falla, R.A.
Banded Dotterel at the Auckland Islands: description of a new sub-species [1978, eng] B-20591

Fandry, C.B.
Combined effects of wind stress and topography in a two-layer model of the Southern Ocean [1978, eng] J-20162

Fanning, K.A.
Processes affecting the concentration of silica at the sediment-water interface of the Atlantic Ocean [1975, eng] J-20506
Processes affecting the concentration of silica at the sediment-water interface of the Atlantic Ocean [1974, eng] J-20519

Farman, J.C.
Ozone measurements at British Antarctic Survey stations [1977, eng] I-19479
Annual summary tables of surface meteorological observations at British Antarctic Survey stations [1976, eng] I-19556

Farmer, R.
Deep Freeze 1978 cruise report [1978, eng] G-19865

Fasola, A.
Palynological study of triassic samples from the Beardmore Glacier area in Antarctica [1974, eng] E-21485

Faure, G.
Strontium isotopic study of sediment from the Ross Sea [1977, eng] E-19640
Study of strontium isotopes in lakes and surficial deposits of the ice-free valleys, Southern Victoria Land, Antarctica [1978, eng] E-20164
Use of strontium isotopes to study mixing of sediment derived from different sources: the Ross Sea, Antarctica [1978, eng] E-20513
Sources and abundance of volcanogenic sediment in piston cores from the Ross Sea, Antarctica [1977, eng] E-20753
Rubidium-strontium geochronology of granitic rocks from Mt. Chapman, Whitmore Mountains, West Antarctica [1978, eng] E-21509

Fedorov, K.P.
Phosphate content in Drake Passage water [1978, rus] J-20641

Fedorov, L.V.
Geological structure of Mac. Robertson Land (East Antarctica) [1978, rus] E-20600
Comparison of geological structure of southeast Indostan and Sri Lanka with Enderby Land, Mac. Robertson Land and Princess Elizabeth Land in East Antarctica [1978, rus] E-21699

Fedorov, V.V.
Temperature and wind velocity variations in the winter polar mesosphere [1974, eng] I-20135

Fedotov, V.I.
East Antarctic pack ice [1977, rus] F-19841

Fedotova, N.I.
Changes in the lipid fatty-acid composition of *Ocean* krill paste after cooking [1977, rus] B-21437

Feeney, R.E.
Biological antifreeze [1974, eng] B-19275
Penguin evolution: protein comparisons demonstrate phylogenetic relationship to flying aquatic birds [1976, eng] B-20927

Fehrenbach, M.
Optical observations systems for the ARAKS experiment [1978, eng] K-21420

Feĭgin, F.Z.
Isolated bursts of type Pc1b geomagnetic pulsations at high latitudes [1978, eng] K-21242
Method of locating the Pc1 source and hot plasma parameters in the generation region [1979, eng] K-21381

Fennell, J.F.
Satellite observations of polar, magnetotail lobe, and interplanetary electrons at low energies [1978, eng] K-19912

Fenwick, G.D.
Leopard seals at the Snares Islands, New Zealand [1978, eng] B-20527

Ferguson, C.F.
Biochemical studies on marine zooplankton. 12. Further investigations on *Euphausia superba* Dana [1974, eng] B-21251

Fiadeiro, M.E.
Three-dimensional modeling of tracers in the deep Pacific Ocean: 1. Salinity and oxygen [1978, eng] J-20185

Fillon, R.H.
Ice-rafted detritus and paleotemperature: Late Cenozoic relationships in the Ross Sea region [1977, eng] E-19259

Findlay, R.H.
Provisional report on the geology of the region between the Renegar and Blue Glaciers, Antarctica [1978, eng] E-20320

Finger, K.L.
Foraminiferal species obtained by R/V *Hero* from Deception Island, 1971-1976 [1977, eng] B-19617

Fireman, E.L.
Terrestrial ages of four Allan Hills meteorites: consequences for antarctic ice [1979, eng] E-21104

Firsov, N.T.
Antarctic ice sheet deformation [1978, rus] F-20744

Fischer, W.
Methods of Soviet krill fisheries [1974, ger] A-20939
News about krill [1974, ger] A-20940
News about krill Pt.2 [1975, ger] A-20941
Diurnal migration of antarctic krill [1976, ger] B-20965
Stock estimation of krill in the Atlantic sector of the Antarctic by vertical sounding [1977, ger] B-20975
Behavior of krill *(Euphausia superba* Dana) [1978, ger] B-21450

Fisher, R.M.
Metallographic properties of Yamato iron meteorite, Yamato-75031, and stony-iron meteorite, Yamato-74044 [1978, eng] E-19936
Note on new antarctic iron meteorites [1978, eng] E-19937

Fishery Information, Data and Statistics Service
Southern Ocean (Major fishing areas 48, 58, 88) nominal catches by countries and species, 1971-1977 [1978, eng] A-21383

Fitch, B.
Polarizing radiometer measurements of skylight at South Pole station, Antarctica [1977, eng] I-20899
Surface energy balance measurements at the South Pole [1976, eng] I-21662

Fitte, E.J.
Chronicles of the South Atlantic: Patagonia, Falkland Islands and Antarctica [1974, spa] M-20174

Flechtenmacher, W.
Processing and product development [1978, ger] B-21451
Processing of krill [1976, ger] G-20967

Fleming, C.A.
Bivalve mollusc genus *Limatula:* a list of described species and a review of living and fossil species in the southwest Pacific [1978, eng] B-20101

Fletcher, J.O.
Role of the polar regions in global climate change [1978, eng] I-20202

Fligel', D.S.
Method of locating the Pc1 source and hot plasma parameters in the generation region [1979, eng] K-21381

Flint, R.B.
Effect of solar magnetic sectors on the vertical component of the atmospheric electrical field at Vostok [1978, rus] K-21461
Soviet-American geophysical research at Vostok Station [1978, rus] L-21460

Flint, R.F.
Present state of knowledge about late Cenozoic glaciation [1975, rus] I-21014

Flohn, H.
Abrupt events in climatic history [1978, eng] I-21110

Flynn, T.C.
Colds and immunity in the 77 winter personnel at McMurdo Station and Scott Base, 1976 [1977, eng] H-19593

Fodor, R.V.
Petrology and K-Ar age of volcanic tuff and ash from the Walvis Seamount province, DSDP Site 259, Leg 39 [1977, eng] E-19850

Fogg, G.E.
Aquatic primary production in the Antarctic [1977, eng] B-20274

Fokeev, N.V.
Strength of summer shore ice in Antarctica under uniaxial compression [1977, eng] F-19406
Relation of strength to density in antarctic summer sea ice [1977, eng] F-19407

Fokeev, N.V. *(cont.)*
Elasticity-strength relationship in the antarctic fast ice [1977, eng] **F-19408**

Foldvik, A.
Thermohaline convection in the vicinity of an ice shelf [1977, eng] **J-20034**

Fomichev, V.V.
Radiospectrograph in the frequency range of 25 to 50 megahertz [1978, eng] **K-21424**

Fontugne, M.
Carbon isotope ratio of marine plankton related to surface water masses [1978, eng] **B-20959**

Ford, A.B.
Baseline microbiological data for soils of the Dufek Massif [1977, eng] **B-19611**
Geological comparison of the Shackleton Range and the Pensacola Mountains during the 22nd Soviet Antarctic Expedition [1977, eng] **E-19649**
Geological studies of the Dufek intrusion, Pensacola Mountains, 1976-1977 [1977, eng] **E-19650**
Geology of the Saratoga Table quadrangle, Pensacola Mountains, Antarctica [1978, eng] **E-21257**
Geology of the Davis Valley quadrangle and part of the Cordiner Peaks quadrangle, Pensacola Mountains, Antarctica [1978, eng] **E-21258**

Forester, R.M.
Distributional model for marine isopod crustaceans and its bearing on early Paleozoic paleozoogeography and continental drift [1979, eng] **B-21394**

Forsythe, R.
Structural observations in the Darwin Mountains, Antarctica and Tierra del Fuego: 77-4 Cruise of the r/v *Hero* [1977, spa] **E-21335**

Forsythe, R.D.
Geologic reconnaissance of the Pre-Late Jurassic basement: Patagonian Andes [1978, eng] **E-21504**

Foster, A.L.
Radar as an aid to surface navigation in Antarctica [1977, eng] **G-19348**

Foster, M.S.
Airborne Research Data System (ARDS): Description and an evaluation of meteorological data recorded during selected 1977 antarctic flights [1978, eng] **I-21006**

Foster, T.D.
International Weddell Sea Oceanographic Expedition, 1977 [1977, eng] **J-19619**
Oceanographic observations near the edge of the Ross Ice Shelf in McMurdo Sound [1977, eng] **J-19622**
Tidal currents in the central Weddell Sea [1977, eng] **J-19809**
Water masses and circulation in the Weddell Sea [1977, eng] **J-20029**
Antarctic Bottom Water formation in the Weddell Sea [1977, eng] **J-20030**
Polar oceans: similarities and differences in their physical oceanography [1978, eng] **J-20203**
Temperature and salinity fields under the Ross Ice Shelf [1978, eng] **J-21551**
International Weddell Sea Oceanographic Expedition, 1978 [1978, eng] **J-21552**

Frakes, L.A.
Cenozoic climates: Antarctica and the Southern Ocean [1978, eng] **I-21107**

France. Centre national de la recherche scientifique. Laboratoire de glaciologie
Chronicle of tasks accomplished from Oct. 31, 1971 to Nov. 1, 1972 [1972, fre] **A-20321**
Chronicle of accomplishments in 1973 [1973, fre] **F-20419**
Chronicle of accomplishments in 1974 [1975, fre] **F-20420**
Chronicle of accomplishments in 1975 [1976, fre] **F-20421**
Chronicle of accomplishments in 1976 [1977, fre] **F-20422**
Activities report 1976 [1977, fre] **F-20423**

France. Ministère d'Etat chargé des départements et territoires d'outre-mer. Terres australes et antarctiques françaises
Medical research in the Antarctic, particularly in the French austral and antarctic territories [1978, fre] **H-20232**
Description of the T.A.A.F. geodesic network, Kerguelen Islands [1976, fre] **L-20351**

France. Ministère d'Etat chargé des départements et territoires d'outre-mer. Terres australes et antarctiques françaises. Direction des laboratoires scientifiques
Scientific research in the French Southern and Antarctic Lands. Outline of Plan 6 [1970, fre] **A-19380**

Franceschini, G.A.
Solar radiation measurements in the Weddell Sea, 1977 [1977, eng] **I-19708**
Seasonal variation of incident solar radiation over the South Atlantic Ocean [1977, eng] **I-19709**
Solar radiation over the Weddell and Ross Seas [1978, eng] **I-21608**

Fraser, W.
Ecological and behavioral adaptations to antarctic environments [1977, eng] **B-19605**

Frazier, K.
Is there an iceberg in your future [1977, eng] **F-20300**

Fredriksson, K.
Eleven new meteorites from Antarctica, 1976-1977 [1978, eng] **E-21124**

Freytag, G.
Space conference in Konstanz—Scientific results on fisheries [1973, ger] **A-20938**
Investigations by echosounding [1978, ger] **B-21448**

Friedmann, E.I.
Microorganisms in antarctic desert rocks from dry valleys and Dufek Massif [1977, eng] **B-19612**
Melting snow in the dry valleys is a source of water for endolithic microorganisms [1978, eng] **B-21601**

Froggatt, P.C.
Densities, porosities, and seismic velocities of some rocks from Victoria Land, Antarctica [1978, eng] **E-20849**

Frolkina, Zh.A.
Age determination in green notothenia *(Notothenia gibberifrons* Lönnb, Notothenidae) of the southwest Atlantic [1975, rus] **B-21325**

Frost, H.J.
Effect of impurities on the creep of ice 1h and its illustration by the construction of deformation maps [1977, eng] **F-20109**

Frost, P.G.H.
Design and application of a coded format for recording observations of cetaceans at sea [1976, eng] **B-19897**
Report on South African participation in cruise MD08 of MS *Marion Dufresne,* March-April 1976 [1976, eng] **B-19902**

Fruneau, M.
Measurement of Be-10 in 1,000- and 5,000-year-old antarctic ice [1978, eng] **F-20980**

Fuchs, V.
Discussion on scientific research in Antarctica [1977, eng] **A-20272**

Fuenzalida Ponce, R.
Magellan Fault Zone [1976, eng] **E-20148**

Fuhs, A.E.
Self propelled iceberg [1978, eng] **F-20470**

Fujii, R.
Conversational system of spectrum analysis by the use of graphic display [1978, jap] **A-20826**
Field-aligned currents in the south polar cusp and their relationship to the interplanetary magnetic field [1978, eng] **K-21058**
Correlation between cusp field-aligned currents and interplanetary magnetic field [1979, jap] **K-21680**

Fujii, Y.
Temperature profile in the drilled hole [1978, eng] **F-21312**
Meteorological data at Mizuho Station, Antarctica in 1977-1978 [1978, eng] **I-20999**

Fujino, K.
Measurements of drifting snow at Mizuho Camp, East Antarctica, 1974-75 [1977, eng] **F-19520**

Fujita, M.
Distribution of trace elements around Syowa Station. 1. Particulate arsenic content [1977, jap] **I-19290**

Fukuchi, M.
Harpacticus furcatus Lang from the Antarctic Peninsula, with reference to the Copepodid stages (Copepoda: Harpacticoida) [1978, eng] **B-20086**
Chlorophyll-*a* content in the surface water along the course of the *Fuji* to and from Antarctica in 1976-1977 [1977, eng] **J-19525**

Fukunishi, H.
IAGA/IAMAP joint meeting [1978, jap] **A-20441**
Data acquisition from EXOS-A (Kyokkô) at Syowa Station, Antarctica [1978, jap] **I-20827**
Aurora topic of antarctic research [1976, jap] **K-19427**
Measurements of ionospheric electric fields with antarctic sounding rockets S-210JA-24 and 25 [1979, jap] **K-21681**
Measurements of electric field and auroral X-rays with antarctic balloons [1979, jap] **K-21682**

Fukushima, H.
Saline lake algae in Antarctica [1978, jap] B-20436
Diatom flora and environmental factors in some freshwater ponds of East Ongul Island [1977, jap] E-19296
On the chlorophyll content in the surface water of the Indian and the Antarctic Oceans [1963, eng] J-21278
Fukushima, N.
Annual variation of the geomagnetic field in polar regions [1979, jap] K-21684
Funaki, M.
Profiles of members of the 16th JARE [1976, jap] A-19432
Setting up a strain grid for measurement of glacier movement, Yamato Mountains, Antarctica, 1975-1976 [1977, eng] F-19527
Furuno, T.
On the northern extreme of the pack-ice edge observed by whaling vessels in the summer of the antarctic seasons 1957/58-1962/63 [1977, eng] F-20095
Fusch, L.W.
Colds and immunity in the 77 winter personnel at McMurdo Station and Scott Base, 1976 [1977, eng] H-19593
Gade, H.G.
Melting of ice in sea water: a primitive model with application to the antarctic ice shelf and icebergs [1979, eng] F-21226
Gaevskaia, A.V.
Trematodofauna of some mass species of fish in the southwest Atlantic [1975, rus] B-21324
New species of trematode parasites in fish of the Falkland-Patagonian region, southwest Atlantic Ocean [1977, rus] B-21375
Gagarinova, V.M.
Respiratory infections in arctic and antarctic personnel [1978, rus] H-21040
Gaĭgerov, S.S.
Temperature and wind velocity variations in the winter polar mesosphere [1974, eng] I-20135
Winter stratospheric warmings and springtime reversals in the Antarctic and Arctic [1968, eng] I-20388
Gainanov, A.G.
Regional gravity anomalies in the Atlantic Ocean [1978, rus] L-19498
Galal, S.
Challenges of iceberg utilization [1978, eng] F-20449
Galbally, I.E.
Loss of fixed nitrogen from soils by nitric oxide exhalation [1978, eng] F-20982
Galkin, R.M.
Geomagnetic bays in Antarctica [1977, rus] K-21136
Electromagnetic anomalies in the Mirnyy Observatory area [1977, rus] L-21135
Gambell, R.
Whale conservation: role of the International Whaling Commission [1977, eng] B-19457
Male sperm whale density trends in the southern hemisphere [1976, eng] B-20663
Population biology and the management of whales [1976, eng] B-20834
Dentinal layer formation in sperm whale teeth [1977, eng] B-21028
Garling, W.
Antarctic krill resource: prospects for commercial exploitation [1978, eng] B-19864
Antarctic krill: ecology and commercial exploitation [1978, eng] B-21582
Garshenin, V.F.
Experiment in using a suit with electric heating elements under conditions of the coastal zone of the antarctic continent [1976, eng] G-20989
Gassmann, G.J.
Ionosphere [1972, eng] K-21236
Gavrilov, V.M.
Penguin energetics [1977, rus] B-19536
Basic reading list on penguins (1954-1974) [1977, rus] B-19542
Gegg, S.R.
Cruise data report: R/V *Chain* Cruise 115 Legs 3 and 4, Southlant Expedition [1974, eng] J-21000
Gentry, R.L.
Seal and emperor penguin survey, Victoria Land Coast [1978, eng] B-21596
Geochile
Antarctica [1978, spa] A-20243
Geological Society of America
1975 annual meetings [1975, eng] A-20269
Cordilleran Section 70th annual meeting [1974, eng] E-20070
1974 annual meetings [1974, eng] E-20071
George, R.Y.
Dissimilar and similar trends in antarctic and arctic marine benthos [1977, eng] B-20040
Georgi, D.T.
Antarctic oceanographic zonation [1977, eng] J-20024
Fine structure in the Antarctic Polar Front Zone: its characteristics and possible relationship to internal waves [1978, eng] J-20708
Observations on the southwest Indian/Antarctic Ocean [1977, eng] J-21024
Differences between AA1W in the southeast Pacific and the southwest Atlantic [1978, eng] J-21554
Gerbovich, V.I.
Transmitting ECG's from Antarctica to Moscow by radio [1977, rus] H-21146
Gerson, U.
Lichen-invertebrate associations [1977, eng] B-21176
Ghoda, A.
Bacteriological investigation of the pollution at Syowa Station [1977, jap] H-19303
Giginiak, IU.G.
Fecundity of some crustacean species in the sublittoral zone of the Davis Sea, Antarctica [1978, rus] B-21436
Gilchrist, J.T.
U.S. Antarctic Support study extension: Case 10—McMurdo Station-Outer Williams Field military construction and operation [1972, eng] G-20304
U.S. Antarctic support study extension: Case 11—McMurdo Station-Williams Field military construction and civilian operation (modified operation) [1972, eng] G-20305
Gillmor, C.S.
Vodka amongst the penguins—hamming with the Russians in Antarctica [1979, eng] G-21711
Early history of upper atmospheric physics research in Antarctica [1978, eng] K-20299
Gilmer, R.W.
Zoogeographic and taxonomic review of euthecosomatous Pteropoda [1977, eng] E-20566
Gilmour, A.E.
Ross Ice Shelf sea temperature [1979, eng] J-21097
Gimingham, C.H.
Classification of cryptogamic communities in the maritime Antarctic [1976, eng] B-19547
Girard, D.
Underwater inspection of icebergs [1978, eng] F-20465
Girs, A.A.
Global atmospheric circulation as an oscillatory process and study of its characteristics using POLEX data [1977, eng] I-19786
Given, D.R.
Goats on Auckland Islands [1978, eng] B-20903
Subantarctic Pteridophyta: observations and new records [1978, eng] B-21357
Gjelsvik, T.
Fifty years of service in polar regions [1978, eng] A-21259
Gjessing, E.T.
Chemical composition of an antarctic snow profile [1973, eng] F-20055
Gjessing, Y.T.
Chemical composition of an antarctic snow profile [1973, eng] F-20055
Filtering effect of snow [1977, eng] F-20120
Gladney, E.S.
Trace metals in the antarctic atmosphere [1974, eng] I-20224
Glasby, G.P.
Ross Sea [1973, eng] A-20060
Marine manganese deposits [1977, eng] E-19509
Deep-sea manganese nodules in the stratigraphic record: evidence from DSDP cores [1978, eng] E-20360
Major element geochemistry of Ross Sea sediments [1978, eng] E-20879
Distribution of manganese nodules with depth in sediments of the South Georgia Basin, Falkland (Malvinas) Plateau and adjacent areas [1978, eng] E-21566
Glass, B.
Ecological and behavioral adaptations to antarctic environments [1977, eng] B-19605
Glass, B.M.
Winter observations of birds at Palmer Station in 1977 [1978, eng] B-21588
Glazova, T.N.
Physiological and biochemical features of the crested penguin [1977, rus] B-19539

Gleadow, A.J.W.
Fission track geochronology of King Island, Bass Strait, Australia: relationship to continental rifting [1978, eng] **E-19870**
Gledhill, J.A.
Observations of the ionosphere over the South Atlantic Ocean [1976, eng] **K-19898**
Glen, J.W.
Electrical behaviour of finely divided ice [1978, eng] **F-21067**
Gless, E.E.
Life cycle studies of some antarctic mites and description of a new species, *Protereunetes paulinae* sp.n. (Acari: Eupodidae) [1968, eng] **B-19518**
Global Atmospheric Research Programme (GARP). WMO-ICSU Joint Organizing Committee
Polar sub-programme [1978, eng] **A-20983**
Gloersen, P.
Integrated approach to the remote sensing of floating ice [1977, eng] **F-19861**
Gloerson, P.
Microwave brightness of polar firn as measured by Nimbus 5 and 6 ESMR [1978, eng] **F-21496**
Glynn, J.
Iceberg calving from floating glaciers by a vibrating mechanism [1978, eng] **F-20571**
Godeĭchik, A.V.
Rate of ice melting in water [1978, rus] **F-21390**
Godfrey, J.S.
Role of the oceans [1978, eng] **I-21106**
Godin, R
Investigation of synoptic and associated mesoscale patterns leading to significant weather days at McMurdo Station, Antarctica [1977, eng] **I-20492**
Goldich, S.S.
Fluorine, chlorine, and sulfur in Cenozoic volcanic rocks of Ross Island and vicinity, Antarctica [1978, eng] **E-20363**
Trace elements in volcanic rocks of Ross Island and vicinity, Antarctica, amd implications for the origin of alkali-basalt magma [1978, eng] **E-20365**
Petrochemical model for the genesis of the volcanic rocks from Ross Island and vicinity, Antarctica [1978, eng] **E-20373**
Golding, T.J.
Buoy and ship examination of the subtropical convergence south of Western Australia [1978, eng] **J-21233**
Goldman, C.R.
Ecological aspects of iceberg transport from antarctic waters [1978, eng] **F-20485**
Goldstein, J.I.
Note on new antarctic iron meteorites [1978, eng] **E-19937**
Golikov, IU.V.
VLF signal observations at Molodezhnaya Station [1978, rus] **K-20773**
Golubev, V.
Eminent polar explorer (in observance of the 70th anniversary of M.M. Somov's birth) [1978, rus] **A-21713**
Gonfiantini, R.
Standards for stable isotope measurements in natural compounds [1978, eng] **J-20784**
Gontsova, L.P.
Krill meal as poultry feed [1976, rus] **B-19994**
Gonzales Ferran, O.
Proceedings [1976, eng] **E-20144**
Gonzalez Ferran, O.
Paulet Island and recent volcanism in the islands of the northwest Weddell Sea [1973, spa] **E-21086**
Age of Mount Andrus and Sr 87/Sr 86 ratio of volcanic rocks in Marie Byrd Land and the South Shetlands [1973, spa] **E-21087**
Goodman, D.J.
Effect of impurities on the creep of ice 1h and its illustration by the construction of deformation maps [1977, eng] **F-20109**
Continuous surface strain measurements on sea ice and on Erebus Glacier Tongue, McMurdo Sound, Antarctica [1978, eng] **F-21543**
Goodney, D.E.
Cenozoic and Late Mesozoic paleoceanographic and paleoglacial history recorded in circum-Antarctic deep-sea sediments [1977, eng] **J-19261**
Gorbonosova, N.B.
Design recommendations for insulated clothing for members of Soviet antarctic expeditions [1978, rus] **G-21045**
Gordienko, F.G.
Influence of climatic and glaciological factors on paleotemperature of continental ice sheets [1976, rus] **F-19973**
Isotope analysis of ice cores from Vostok station (Antarctica), to the depth of 950 m [1977, eng] **F-20130**
Gordienko, P.A.
Problems of exploitation and conservation of the ocean [1977, rus] **J-20517**
Gordon, A.L.
Effect of glacial ice melting on the Antarctic Surface Water [1979, eng] **E-21657**
Islas Orcadas cruise 12: Cape Town to Buenos Aires [1977, eng] **J-19633**
Basin waters of the Bransfield Strait [1978, eng] **J-19913**
Antarctic oceanographic zonation [1977, eng] **J-20024**
International Southern Ocean studies [1977, eng] **J-20032**
Large-scale relative dynamic topography of the Southern Ocean [1978, eng] **J-20533**
Climatic characteristics of the Antarctic Polar Front Zone [1978, eng] **J-20707**
Southern ocean temperature gradient near 2C [1977, eng] **J-21025**
Circulation and melting beneath the Ross Ice Shelf [1979, eng] **J-21098**
Deep antarctic convection west of Maud Rise [1978, eng] **J-21130**
South Atlantic oceanography [1978, eng] **J-21555**
Gordon, J.E.
Major rockfall and debris slide on the Lyell Glacier, South Georgia [1978, eng] **E-20009**
Gordon, L.E.
Oceanographic station data collected aboard R/V *Melville* during FDRAKE 75 [1977, eng] **J-20078**
Gordon, L.I.
Soviet-American research aboard RV *Professor Zubov* [1977, eng] **J-19627**
Oceanographic data collected aboard R/V *T.G. Thompson* during FDRAKE 76, Legs I and II [1978, eng] **J-20413**
Gordon, R.B.
Absolute motion of an individual plate estimated from its ridge and trench boundaries [1978, eng] **E-20570**
Gosztonyi, A.E.
Results of the research cruises of FRV *Walther Herwig* to South America. XLVIII. Revision of the South American Zoarcidae (Osteichthyes, Blennioidei) with the description of three new genera and five new species [1977, eng] **B-20556**
Gould, L.M.
Emergence of Antarctica [1978, eng] **A-20199**
Govorukha, L.S.
Antarctic necklace [1977, rus] **A-21158**
Gow, A.J.
Rheological implications of the internal structure and crystal fabrics of the West Antarctic ice sheet as revealed by deep core drilling at Byrd Station [1976, eng] **F-19330**
Dielectric constant and reflection coefficient of the snow surface and near-surface internal layers in the McMurdo Ice Shelf [1977, eng] **F-19682**
Subsurface measurements of the Ross Ice Shelf, McMurdo Sound, Antarctica [1977, eng] **F-19689**
Creep rupture at depth in a cold ice sheet [1978, eng] **F-20981**
Ultrasonic measurements on deep ice cores from Antarctica [1978, eng] **F-21530**
Gracanin, T.M.
Bird and seal observations at Joinville Island and offshore islands [1978, eng] **B-21595**
Geologic studies in the northern Antarctic Peninsula, R/V Hero cruise 78-1B, February 1978 [1978, eng] **E-21505**
Graffe, G.
Temperature of the biotic medium and its effect on Cercaria; considerations and experiments in relation to observations in Antarctica [1971, ger] **B-19379**
Grant-Taylor, T.L.
Nukumaruan records of the subantarctic scallop *Chlamys delicatula* and crab *Jacquinotia edwardsii* in central Hawke's Bay [1977, eng] **E-19465**
Grantham, G.J.
Utilization of krill [1977, eng] **B-20003**
Great Britain. Antarctic Place-Names Committee
Gazetteer of the British Antarctic Territory [1977, eng] **A-20159**
Great Britain. Natural Environment Research Council
British Antarctic Survey [1977, eng] **A-20267**
British Antarctic Survey: annual report, 1975-76 [1977, eng] **A-20268**
Great Britain. Natural Environment Research Council 1965-1975
Land, air and sea—research in man's environment [1975, eng] **A-20818**

Great Britain. Natural Environment Research Council. NERC news journal
Reindeer in the Antarctic [1978, eng] **B-20714**
Great Britain. Royal Naval Medical Service. Journal
Two naval medical explorers [1977, eng] **A-20190**
Green, C.A.
Polarization characteristics and phase differences of Pi2 pulsations at conjugate stations [1978, eng] **K-21018**
Green, H.W., II
Test ultrastructure of some calcareous foraminifera [1977, eng] **E-19419**
Green, J.L.
On the polarization and origin of auroral kilometric radiation [1978, eng] **K-19873**
Green, K.A.
Ecosystem modeling for the southern ocean [1977, eng] **B-19615**
Role of krill in the antarctic marine ecosystem [1977, eng] **B-20222**
Greenler, R.
Optical effects resulting from airborne ice crystals [1977, eng] **F-19703**
Greischar, L.L.
Ross Ice Shelf Geophysical survey, 1977-1978 [1978, eng] **F-21538**
Grew, E.S.
With the Soviets in Antarctica, austral summer 1976-1977 [1977, eng] **E-19648**
Precambrian basement at Molodezhnaya Station, East Antarctica [1978, eng] **E-20181**
Petrologic study of the granulite-facies metamorphic rocks of Enderby Land, East Antarctica, with the Australian National Antarctic Research Expedition (ANARE), 1977-78 [1978, eng] **E-21497**
Gribbin, J.
Climatic change [1978, eng] **I-21186**
Griffin, B.J.
Outlying islands of Macquarie Island [1978, eng] **E-20847**
Griffin, J.B.
University of Michigan radiocarbon dates XII [1968, eng] **B-19843**
Griffin, O.M.
Heat, mass and momentum transfer effects on the albation of icebergs in seawater [1978, eng] **F-20463**
Griffiths, D.H.
Towards a more certain reconstruction of Gondwanaland [1977, eng] **L-20278**
Griffiths, R.P.
Comparison between two methods of assaying relative microbial activity in marine environments [1977, eng] **B-21185**
Grigarick, A.A.
Tardigrada of New Zealand [1978, eng] **B-20549**
Grigorian, S.S.
Internal heating and surges of nontemperate glaciers [1978, rus] **F-21204**
Grikurov, G.E.
Geology of the Antarctic Peninsula [1978, eng] **E-20236**
Tectonic zonation and geological evolution of Antarctica [1978, rus] **E-20674**
Discovery of first Middle Cambrian trilobites in the Shackleton Range [1978, rus] **E-21701**
Grindley, G.W.
Paleomagnetism, K-Ar dating and tectonic interpretation of Upper Cretaceous and Cenozoic volcanic rocks of the Chatham Islands, New Zealand [1977, eng] **E-19805**
Grindley, J.R.
Report on South African participation in cruise MD08 of MS *Marion Dufresne*, March-April 1976 [1976, eng] **B-19902**
Gringauz, K.I.
Device for determination of the electrical potential of a rocket carrying an electron gun [1978, eng] **K-21417**
Groman, R.C.
Cruise data report: R/V *Chain* Cruise 115 Legs 3 and 4, Southlant Expedition [1974, eng] **J-21000**
Gromov, V.V.
Yttrium-90 absorption by krill [1977, eng] **B-19276**
Gropp, J.
Fermented alkane and krill meal as a fish meal substitute in trout fodder [1977, ger] **B-20969**
Groscolas, R.
Utilization of energy reserves during the breeding fast in the Emperor penguin, *Aptenodytes forsteri* [1976, fre] **B-19341**
Study of molt fasting followed by an experimental forced fasting in the emperor penguin *Aptenodytes forsteri*: relationship between feather growth, body weight loss, body temperature and plasma fuel levels [1978, eng] **B-21222**
Grosval'd, M.G.
Last glaciation of the Ross Sea, Antarctica [1977, rus] **E-20156**
Symposium on the History of Antarctic Glaciation [1978, rus] **F-21392**
Grushinskiĭ, N.P.
Antarctic gravity anomaly map [1978, rus] **C-21702**
Catalog of gravity stations in Antarctica (Explanatory notes and charts) [1973, eng] **L-21089**
Gravimetric measurements in Antarctica and their interpretation [1978, rus] **L-21703**
Gruzov, E.N.
Antarctic marine biological research by divers [1978, rus] **B-20680**
Guala, J.R., Jr.
Bottom topography effects on ocean currents [1972, eng] **J-21196**
Gubanova, S.I.
Evaluation of the informational value of upper-air and satellite measurement systems [1977, rus] **I-20515**
Gudkovich, Z.M.
Problem of conjugation of currents in the Arctic and Southern Oceans [1977, eng] **J-19785**
Gudmandsen, P.
Microwave radiometry of ice and snow [1975, eng] **F-20238**
New 60-megahertz antenna array for radio echo sounding [1978, eng] **G-21643**
Guerrero, G.E.
Polar auroras [1975, spa] **K-20258**
Harmonic analysis of auroral pulsations [1978, eng] **K-20880**
Guillard, R.R.L.
Ecology of marine planktonic diatoms [1977, eng] **B-21055**
Guillier, M.T.
Gif natural radiocarbon measurements VI [1972, eng] **I-19845**
Guinasso, N.L., Jr.
Processes affecting the concentration of silica at the sediment-water interface of the Atlantic Ocean [1975, eng] **J-20506**
Processes affecting the concentration of silica at the sediment-water interface of the Atlantic Ocean [1974, eng] **J-20519**
Guliaev, V.N.
Using dehydrated "Okean" protein paste in foods [1976, rus] **B-20821**
Gulland, J.
Living resources of Southern Ocean [1977, eng] **B-19456**
Gunderson, E.K.E.
Relationship between cohesiveness and effectiveness in small isolated groups: a field study [1974, eng] **H-21072**
Group homogeneity, compatibility and accomplishment [1967, eng] **H-21074**
Group compatibility in restricted environments [1967, eng] **H-21119**
Factors affecting the stability of job attitudes in long-term isolated groups [1970, eng] **H-21197**
Individual behavior in confined or isolated groups [1970, eng] **H-21198**
Gunner, J.
Anatectic origin of late orogenic granitic intrusions of the Hope and Ida groups in the Beardmore Glacier area, Antarctica [1972, rus] **E-20134**
Gunnlaugsson, E.
Geochemistry of basalt-sea-water interactions: evidence from Deception Island, Antarctica, and Reykjanes, Iceland [1977, eng] **E-20618**
Gupta, J.C.
On the quiet-time Pc5 pulsations events (spacequakes) [1979, eng] **K-21380**
Gurnett, D.A.
On the polarization and origin of auroral kilometric radiation [1978, eng] **K-19873**
Gusarova, A.N.
Authigenous silicon in the mixed plankton from the Atlantic province of the Antarctic [1978, eng] **B-21478**
Gusev, A.M.
Circulation features of the Antarctic atmosphere and the Southern Ocean [1978, rus] **K-21694**
Gusev, G.A.
Broad-band wave measurements in the ARAKS experiment [1978, eng] **K-21413**
Gusev, V.P.
Brief geographical and medical description of Leningradskaya Station [1978, rus] **H-21047**
Guseva, E.V.
Effect of extreme antarctic conditions on blood serum protein composition in polar workers [1978, rus] **H-21435**
Human immunology under antarctic conditions [1978, rus] **H-21708**
Gwynne, P.
To Antarctica with love [1974, eng] **A-20575**

Gwynne, P. *(cont.)*
Get ready Antarctica—here comes the boom [1977, eng] **A-20595**
Haggard, R.
Observations of the ionosphere over the South Atlantic Ocean [1976, eng] **K-19898**
Hajek, E.R.
Analysis of relationships among antarctic mesofauna and various climatic factors [1977, spa] **B-20910**
Wind chill index as applied to three Chilean antarctic bases [1972, spa] **I-19794**
Hall, F.F., Jr.
Acoustic sounder operations at South Pole Station [1977, eng] **I-19702**
Atmospheric acoustic echo sounding investigations at the South Pole [1976, eng] **I-21666**
Hall, J.
Record of *Mytilus edulis* L. from South Georgia [1976, eng] **B-19563**
Hall, S.A.
Biostratigraphy of Seymour Island, Antarctica [1978, eng] **E-19939**
Hall, W.B.
Polar mining [1975, eng] **E-20888**
Halpern, M.
Age of Mount Andrus and Sr 87/Sr 86 ratio of volcanic rocks in Marie Byrd Land and the South Shetlands [1973, spa] **E-21087**
Halter, B.C.
Geophysical monitoring for climatic change at the South Pole, 1977 [1978, eng] **I-21618**
Hamburg. Bundesforschungsastalt für Fischerei
Research and exploration of the resources of krill and food fish in the Antarctic [1977, eng] **A-19515**
Hamburg, Federal Republic of Germany. Bundesforschungsanstalt für Fischerei
First krill expedition of the Federal Republic of Germany to antarctic waters [1975, ger] **A-20942**
First segment of the Antarctic Expedition completed [1976, ger] **A-20962**
First information about the second segment of the antarctic voyage [1976, ger] **A-20963**
First German krill expedition to the Antarctic completed [1976, ger] **A-20964**
Antarctic expedition of 1977-1978 in preparation [1977, ger] **D-20974**
Hamilton, R.
Surface energy balance measurements at the South Pole [1976, eng] **I-21662**
Hamilton, R.H.
Atmospheric processes and energy transfers at the South Pole [1977, eng] **I-19700**
Hammer, C.U.
Stable isotope profile through the Ross Ice Shelf at Little America V, Antarctica [1977, eng] **F-20125**
Hammer, W.R.
New Triassic vertebrates from the Fremouw Formation of the Queen Maud Mountains [1978, eng] **E-21514**
Hamoir, G.
Protein differentiation of the white, yellow and cardiac muscles of an antarctic hemoglobin-free fish, *Champsocephalus gunnari* [1978, fre] **B-19780**
Hamon, B.V.
Role of the oceans [1978, eng] **I-21106**
Hannuki, T.
Flow-visualization by means of soap bubbles on snowdrift around the huts at Syowa Station [1978, jap] **F-20824**
Hansen, B.L.
Ross Ice Shelf Project [1979, eng] **F-21094**
Hanson, G.N.
Ages for the vida granite and olympus granite gneiss, Victoria Valley, southern Victoria Land [1978, eng] **E-21508**
Hanya, T.
Organic constituents of antarctic lake waters and sediments of the McMurdo Sound region [1978, eng] **E-20370**
Hanzawa, S.
Beginnings of JARE [1978, jap] **A-19762**
Hara, M.
Nutrition and food supply in Antarctica [1963, jap] **G-19445**
Haramura, H.
Preliminary mineralogical examination of the Yamato-74 achondrites [1978, eng] **E-19927**
Yamat-74662 meteorite: a carbonaceous chondrite Type II [1978, eng] **E-19938**
Hardy, R.
Hydrocarbons in the marine environment. 2. Distribution of *n*-alkanes in the fauna and environment of the subantarctic island of South Georgia [1978, eng] **J-20598**
Hargens, A.R.
Positive tissue fluid pressure in the feet of antarctic birds [1978, eng] **B-21183**
Hargraves, P.E.
Species composition and distribution of net plankton diatoms in the Pacific sector of the Antarctic Ocean [1968, eng] **B-19251**
Hargreaves, J.K.
Eastward movement of the structure of auroral radio absorption events in the morning sector [1976, eng] **K-20689**
Hargreaves, N.D.
Radio-frequency birefringence of polar ice [1978, eng] **F-21068**
Harkness, D.D.
Glasgow University radiocarbon measurements II [1970, eng] **I-19844**
Harney, T.
Curator finds rare meteorites in antarctic group [1978, eng] **E-21017**
Harrington, R.
Richard Harrington's Antarctic [1976, eng] **A-19469**
Harris, T.F.W.
Satellite-tracked drifters between Africa and Antarctica [1978, eng] **J-19812**
Harrison, C.G.A.
Revised reconstruction of the southern continents [1978, eng] **E-20701**
Harrison, R.J.
General physiology of the Pinnipedia [1968, eng] **B-20868**
Harrower, K.
Fixed nitrogen in antarctic ice and snow [1978, eng] **F-21530**
Harrowfield, D.L.
Maintenance of historic huts in Antarctica [1978, eng] **A-20310**
Hart, S.R.
Rb-Sr mantle isochrons and variations in the chemistry of Gondwanaland's lithosphere [1978, eng] **L-19879**
Harter, C.E.
Absolute motion of an individual plate estimated from its ridge and trench boundaries [1978, eng] **E-20570**
Haschemeyer, A.E.V.
Antifreeze glycoprotein biosynthesis in antarctic fishes [1979, eng] **B-21217**
Hasle, G.R.
Some marine plankton genera of the diatom family Thalassiosiraceae [1973, eng] **B-19499**
Nitzschia and *Fragilariopsis* species studied in the light and electron microscopes. 1. Some marine species of the groups *Nitzschiella* and *Lanceolatae* [1964, eng] **B-21265**
Hauyama, H.
Antarctic geomagnetic chart completed [1978, jap] **L-20438**
Hawkes, N.
Science in Europe; moratorium set on antarctic oil at October meeting [1977, eng] **M-19324**
Hawkesworth, C.J.
Nd-143/Nd-144, Sr-87/Sr-86, and incompatible element variations in calc-alkaline andesites and plateau lavas from South America [1979, eng] **E-21224**
Hay, D.A.
Taxonomy and ecology of a new monocelid flatworm from Macquarie Island (Platyhelminthes, Turbellaria) [1977, eng] **B-21347**
Hay, W.W.
Revised reconstruction of the southern continents [1978, eng] **E-20701**
Depositional history of the South Atlantic Ocean during the last 125 million years [1977, eng] **J-19321**
Hayakawa, M.
Observing plan of wave normal direction of auroral VLF emissions on board a rocket at Syowa Station [1978, eng] **K-20955**
Hayasaka, S.S.
Comparison between two methods of assaying relative microbial activity in marine environments [1977, eng] **B-21185**
Salinity and nutrient effects on the induction of the galactose permease system in a psychrophilic marine *Vibrio* [1978, eng] **B-21434**
Hayashi, K.
Convenient assay method for protease of the antarctic krill using paper disks [1978, jap] **B-20943**
Hayashi, M.
On meltwater of snow patches in East Ongul Island, Antarctica [1977, eng] **F-19522**

Hayashi, N.
Meteorological observations at Showa in 1974 by the 15th Japanese Antarctic Research Expedition [1977, eng] **I-19526**
Hayes, D.E.
Circum-Antarctic marine geology [1977, eng] **E-19254**
Kerguelen Plateau bathymetry, sediment distribution and crustal structure [1977, eng] **E-19260**
Plate tectonics synthesis: the displacements between Australia, New Zealand, and Antarctica since the Late Cretaceous [1977, eng] **E-19265**
Hayes, S.P.
Moored temperature time series in the Polar Front Zone during FDRAKE, 1976 [1977, eng] **J-19625**
Observations of the Antarctic Polar Front by a moored array during FDRAKE-76 [1977, eng] **J-20098**
Interaction of the Antarctic Circumpolar Current with topography south of New Zealand [1978, eng] **J-21548**
Hays, J.D.
Antarctic radiolaria and the late Tertiary and Quaternary history of the Southern Ocean [1964, eng] **B-19253**
Heacock, R.R.
Signatures of magnetic field pulsation activity [1977, eng] **K-19717**
High time resolution studies of sudden impulses [1978, eng] **K-21634**
Healy, T.R.
Formation of the Labyrinth, Wright Valley, Antarctica [1977, eng] **E-20178**
Hearn, P.P.
Mineralogy and major element chemistry of suspended sediments from the Chilean archipelago: R/V *Hero* cruise 76-4 [1977, eng] **E-19642**
Geochemistry of the fine size fraction of bottom sediments from the southern Argentine shelf [1978, eng] **E-21577**
Heath, R.A.
Circulation across the ice shelf edge in McMurdo Sound, Antarctica [1977, eng] **J-20028**
Interaction of the Antarctic Circumpolar Current with topography south of New Zealand [1978, eng] **J-21548**
Hedgecock, P.C.
Comparison of inferred and observed interplanetary magnetic field polarities, 1970-1972 [1975, eng] **K-21071**
Hedgpeth, J.W.
Research in Antarctica [1978, eng] **A-21076**
Heiskell, L.E.
Nitrogen in south polar ice and snow: tool to measure past solar, auroral, and cosmic ray activities [1977, eng] **F-19679**
Non-biogenic fixed nitrogen in Antarctica and some ecological implications [1978, eng] **F-19915**
Heizer, R.T.
Energy and fresh water production from icebergs [1978, eng] **F-20486**
Helby, R.J.
Carboniferous and Permian palynostratigraphy in Australia and Antarctica: a review [1977, eng] **E-20396**
Helliwell, R.A.
Siple/Roberval VLF transmitting experiments [1977, eng] **K-19711**
Whistler precursors: a possible catalytic role of power line radiation [1977, eng] **K-19911**
Active very low frequency experiments on the magnetosphere from Siple Station, Antarctica [1977, eng] **K-20281**
Controlled wave-particle interaction experiments [1978, eng] **K-20295**
VLF line radiation in the Earth's magnetosphere and its association with power system radiation [1975, eng] **K-20507**
Nonlinear pitch angle scattering of energetic electrons by coherent VLF waves in the magnetosphere [1978, eng] **K-20535**
Magnetospheric effects of power line radiation [1978, eng] **K-21001**
Whistler-mode propagation studies using Navy VLF transmitters [1967, eng] **K-21192**
Stanford University VLF wave injection experiment on the ISEE-A spacecraft [1978, eng] **K-21234**
Siple/Roberval magnetospheric wave-wave interaction experiments [1978, eng] **K-21626**
Helwig, A.
Geodetic and meteorological investigations of ground refraction over antarctic continental ice [1978, rus] **C-21463**
Hempel, G.
Productivity of the oceans [1973, eng] **A-20072**
Research and exploration of the resources of krill and food fish in the Antarctic. Report on the 1975/76 Antarctic Expedition of the Federal Republic of Germany [1977, ger] **B-21118**
Larval krill *(Euphausia superba)* in the plankton and neuston samples of the German Antarctic Expedition 1975-76 [1978, eng] **B-21344**
Hempel, I.
Larval krill *(Euphausia superba)* in the plankton and neuston samples of the German Antarctic Expedition 1975-76 [1978, eng] **B-21344**
Henderson, L.
Recent sedimentation in the southeast Indian Ocean with special reference to the effects of Antarctic Bottom Water circulation [1978, eng] **J-19992**
Hendy, C.H.
Chronology of glacial sediments in the Taylor Valley [1978, eng] **E-20361**
Peridot on Ross Island—Antarctica [1974, eng] **E-20593**
Dating of geochemical events in Lake Bonney, Antarctica, and their relation to glacial and climate changes [1977, eng] **E-20757**
Herbert, G.A.
Geophysical monitoring for climatic change at the South Pole, 1977 [1978, eng] **I-21618**
Hermosilla, J.G.
Contribution to the knowledge of antarctic dinoflagellates and tintinnids. 1. Plankton collected in December 1969 [1975, spa] **B-19996**
Contribution to the knowledge of dinoflagellates and tintinnids in the Antarctic. Pt. 2. Plankton collected in Foster Bay, December 1970 [1977, spa] **B-20909**
Herron, E.M.
Plate tectonics synthesis: the displacements between Australia, New Zealand, and Antarctica since the Late Cretaceous [1977, eng] **E-19265**
Herron, M.
Chemistry of 700 years of precipitation at Dye 3, Greenland [1975, eng] **F-20599**
Herron, M.M.
Polar ice core analysis [1977, eng] **F-19692**
Interhemispheric comparison of changes in the composition of atmospheric precipitation during the Late Cenozoic era [1977, eng] **F-20045**
Natural enrichment of elements in snow [1978, eng] **F-20391**
Hervé, F.
Structural observations in the Darwin Mountains, Antarctica and Tierra del Fuego: 77-4 Cruise of the r/v *Hero* [1977, spa] **E-21335**
Hessler, V.P.
Determination of the position of the polar boundary of the day cusp from the intensity of high-latitude pulsations [1976, eng] **K-21167**
Hester, R.L.
Microseismicity near the Indian Ocean triple junction [1977, eng] **L-19910**
Heuseler, H.
Research in perennial ice [1975, ger] **A-20289**
Heusser, C.J.
Additional postglacial pollen diagram from Patagonia Occidental [1972, eng] **E-20905**
Heywood, R.B.
Limnological survey of the Ablation Point area, Alexander Island, Antarctica [1977, eng] **B-19472**
Hicks, S.
Gravity survey in the Taylor Valley [1978, eng] **L-20315**
Higashi, A.
X-ray diffraction topographic studies of Antarctic deep core ice [1978, eng] **F-20211**
Mechanical tests of Antarctic deep core ice under hydrostatic pressure—Instrumentation and preliminary results [1979, jap] **F-21491**
Hintenberger, H.
Antarctic meteorite Yamato 74123—a new ureilite [1978, eng] **E-20410**
Hinz, K.
Geophysical studies in Antarctic waters with the *M.S. Explora* [1978, eng] **J-21710**
Hirasawa, T.
Precipitating electrons observed on board the Japanese antarctic sounding rockets S-310JA-1 and S-310JA-2 [1978, eng] **K-20950**
Observations of wave phenomena in the polar ionosphere by S-210JA-19 rocket [1978, eng] **K-20954**
Ho, C.Y.-K.
Penguin evolution: protein comparisons demonstrate phylogenetic relationship to flying aquatic birds [1976, eng] **B-20927**
Biochemistry and immunochemistry of penguin egg-white proteins [1975, eng] **B-21281**
Ho, D.
Outlying plasmasphere structure detected by whistlers [1976, eng] **K-20215**
Hobart, M.A.
Bottom water flow through the Kane Gap, Sierra Leone Rise, Atlantic Ocean [1975, eng] **J-20508**

Hochachka, P.W.
Pulmonary metabolism during diving: conditioning blood for the brain [1977, eng] **B-19326**
Unusual maternal-fetal blood glucose concentrations in Weddell seal [1979, eng] **B-21658**
Hodson, R.E.
Microbial distribution and activity in and around McMurdo Sound [1977, eng] **B-19613**
Hoehn, R.C.
Nutrient fluxes in Lake Bonney—a meromictic antarctic lake [1977, eng] **B-20892**
Hoffman, G.L.
Trace metals in the antarctic atmosphere [1974, eng] **I-20224**
Hofman, R.J.
Analysis of the dynamics of a Weddell seal population [1977, eng] **B-19751**
Hofmann, D.J.
Measurements of trace gases and aerosols in the antarctic stratosphere [1977, eng] **I-19699**
Balloon observations of a particle layer injected by a stratospheric aircraft at 23 km [1978, eng] **I-20625**
Trace gas and aerosol measurements to 30 km in Antarctica [1978, eng] **I-21615**
Balloon sounding the stratospheric sulfate aerosol layer [1976, eng] **I-21667**
Hofmann, J.
Geology and geological research in Antarctica—1. East Antarctica [1975, ger] **E-19397**
Geology and geological exploration of the antarctic continent. 2. West Antarctica and prospects of antarctic deposits [1975, ger] **E-20619**
Hogan, A.
Antarctic aerosols [1978, eng] **I-21668**
Hogan, A.W.
Meteorological research aboard instrumented LC-130R airplane and at the South Pole [1977, eng] **I-19704**
Seasonal and frontal variation in antarctic aerosol concentrations [1978, eng] **I-20781**
Dry ice = Antarctica [1978, eng] **I-21077**
Holdgate, M.W.
Terrestrial ecosystems in the Antarctic [1977, eng] **B-20273**
Holdsworth, G.
Some mechanisms for the calving of icebergs [1978, eng] **F-20459**
Iceberg calving from floating glaciers by a vibrating mechanism [1978, eng] **F-20571**
Erebus glacier tongue movement [1978, eng] **F-21540**
Holdsworth, R.
Lake Vanda (Antarctica) revisited [1977, eng] **E-20754**
Erebus glacier tongue movement [1978, eng] **F-21540**
Continuous surface strain measurements on sea ice and on Erebus Glacier Tongue, McMurdo Sound, Antarctica [1978, eng] **F-21543**
Holm-Hansen, O.
Microbial distribution and activity in and around McMurdo Sound [1977, eng] **B-19613**
Microbial life beneath the Ross Ice Shelf [1978, eng] **B-21578**
Holt, S.J.
Maximum sustainable yield in weight and related matters [1976, eng] **B-20658**
Stock assessments of minke whales [1976, eng] **B-20665**
Holzworth, R.H.
Direct evidence of solar flare modification of stratospheric electric fields [1979, eng] **K-21133**
Honda, M.
Cosmic ray induced Mn-53 in Yamato-7301(j), -7305(k) and -7304(m) meteorites [1978, eng] **E-19930**
Honda, T.
Fuji's maiden cruise [1978, jap] **G-19772**
Hook, E.K.
Criminal jurisdiction in Antarctica [1978, eng] **M-21476**
Horiuchi, K.
Studies of the radium, uranium and thorium concentrations in DVDP cores of Wright Valley [1978, eng] **E-20366**
Horn, B.M.
Distribution of ferromanganese deposits in the World Ocean [1972, eng] **E-19375**
Horn, D.R.
Distribution of ferromanganese deposits in the World Ocean [1972, eng] **E-19375**
Horner, R.A.
History and recent advances in the study of ice biota [1977, eng] **B-20035**
Hornibook, N. de B.
Nukumaruan records of the subantarctic scallop *Chlamys delicatula* and crab *Jacquinotia edwardsii* in central Hawke's Bay [1977, eng] **E-19465**
Horning, D.
Exploring Macquarie Island. Part 1. Southern wildlife outpost [1978, eng] **B-21373**
Horning, D.S.
Australian Museum Macquarie Island Expedition, 1977-78 [1978, eng] **A-20793**
Horning, D.S., Jr.
Leopard seals at the Snares Islands, New Zealand [1978, eng] **B-20527**
Tardigrada of New Zealand [1978, eng] **B-20549**
Hoshiai, T.
Report of the wintering party of the Japanese Antarctic Research Expedition in 1975-1976 [1978, jap] **A-20828**
Seasonal change of ice communities in the sea ice near Syowa Station, Antarctica [1977, eng] **B-20037**
Hoshiati, T.
Profiles of members of the 16th JARE [1976, jap] **A-19432**
Hoshino, T.
Two new fossil demosponges from West Ongul Island, Lützow-Holm Bay, Antarctica [1977, eng] **B-20239**
Hotchkiss, F.H.C.
Antarctic and southernmost South American fossil echinoids [1977, eng] **E-19643**
House, D.A.
Dating of geochemical events in Lake Bonney, Antarctica, and their relation to glacial and climate changes [1977, eng] **E-20757**
Houtz, R.E.
Campbell Plateau and its relationship with the Ross Sea, Antarctica [1977, eng] **E-19258**
Kerguelen Plateau bathymetry, sediment distribution and crustal structure [1977, eng] **E-19260**
Howard, R.V.
First environmental impact monitoring amd assessment in Antarctica. The Dry Valley Drilling Project [1977, eng] **B-19314**
Summary of environmental monitoring and impact assessment of the DVDP [1978, eng] **B-19982**
Howell, L.W., Jr.
Ecosystem studies and mathematical model for Lake Bonney, Taylor Valley, southern Victoria Land [1977, eng] **B-19610**
Development and use of a mathematical model for an antarctic lake [1978, eng] **E-21238**
Hsiung, J.
Long-term global sea surface temperature fluctuations and their possible influence on atmospheric CO2 concentrations [1978, eng] **J-21480**
Hsu, K.J.
Messinian salinity crisis: evidence of Late Miocene eustatic changes in the world ocean [1978, eng] **J-20594**
Huang, T.C.
Reduction in the South Pacific zone of high bottom current activity during the last 3 million years [1978, eng] **J-21568**
Hudson, A.P.
Antifreeze glycoprotein biosynthesis in antarctic fishes [1979, eng] **B-21217**
Hudson, J.D.
Oxygen isotope studies on Cenozoic temperatures, oceans and ice accumulation [1977, eng] **F-20443**
Huestis, S.P.
Bounding the thickness of the oceanic magnetized layer [1977, eng] **L-20013**
Hughes, T.J.
Do oxygen isotope data from deep coreholes reveal dike-sill thermal convection in polar ice sheets [1977, eng] **F-20127**
Hull, A.G.
Glacial deposits and the Taylor Glacier [1978, eng] **F-20319**
Hult, J.L.
Global role of antarctic iceberg exploitation [1978, eng] **F-20452**
Pilot program for exporting antarctic icebergs [1978, eng] **F-20477**
Humphreys, A.E.
Unmanned geophysical observatory for antarctic operation [1972, eng] **K-20555**
Hunkins, K.L.
Abyssal traces and megafauna: comparison of productivity, diversity and density in the Arctic and Antarctic [1978, eng] **J-21452**

Hunter, W.C.
Petrography and petrology of a basanitoid flow from Hut Point Peninsula, Antarctica [1974, eng] **E-19997**
Correlation of clinopyroxene composition with environment of formation based on data from Ross Island volcanic rocks [1978, eng] **E-20375**
Huntford, R.
Amundsen's route to the South Pole [1979, eng] **A-21717**
Huntley, B.J.
Altitudinal distribution and phenology of Marion Island vascular plants [1970, eng] **B-20586**
Huppert, H.E.
On melting icebergs [1978, eng] **F-20907**
Huppert, M.
Identification of some fungi from soil and air of Antarctica [1978, eng] **B-21352**
Hureau, J.C.
Production of lobsters in the waters of Saint Paul and Amsterdam Islands [1977, eng] **B-20044**
Oceanographic activities in the French austral and antarctic territories [1976, fre] **D-20349**
Hushen, W.T.
Polar Research Board, 1977-1978 [1978, eng] **A-21636**
Husler, J.W.
Petrology and K-Ar age of volcanic tuff and ash from the Walvis Seamount province, DSDP Site 259, Leg 39 [1977, eng] **E-19850**
Hussain, S.N.
Iceberg protection by foamed insulation [1978, eng] **F-20472**
Husseiny, A.A.
Iceberg utilization [1978, eng] **F-20448**
Hutson, W.H.
Ecology of planktonic foraminifera and biogeographic patterns of life and fossil assemblages in the Indian Ocean [1977, eng] **B-20102**
Application of transfer functions to Indian Ocean planktonic foraminifera [1978, eng] **E-20803**
Huxley, E.
Scott of the Antarctic [1977, eng] **A-20012**
IAkovlev, V.A.
Functional hormonal activity of the adrenals and sympathetic adrenal system during antarctic acclimatization [1978, rus] **H-21037**
Functional cardiovascular state in expedition members during voyage and wintering over at Leningradskaya Station [1978, rus] **H-21458**
IAniv, I.D.
Determining an astronomical reference point at Molodezhnaya Station, Antarctica [1978, rus] **K-21378**
IArogov, B.A.
Effect of hydrological conditions in the Scotia Sea on aggregations of baleen whales [1973, rus] **B-20584**
Ichimura, S.
On the chlorophyll content in the surface water of the Indian and the Antarctic Oceans [1963, eng] **J-21278**
Ichiye, T.
Contributions to the dynamics of the Antarctic Circumpolar Current. 2. Integral relationships [1975, eng] **J-20244**
Ignatov, V.S.
Nineteenth Soviet Antarctic Expedition. Winter research 1973-75 [1978, rus] **A-21453**
Winter activities of the 19th SAE [1978, rus] **A-21454**
Main results of the 19th Soviet Wintering Expedition [1977, rus] **D-19882**
Results and prospects of Soviet geophysical research in the Antarctic [1978, rus] **L-20675**
Iijima, T.
Small-scale transverse magnetic disturbances in the polar regions observed by Triad [1978, eng] **K-20500**
Correlation between cusp field-aligned currents and interplanetary magnetic field [1979, jap] **K-21680**
Ijima, T.
Field-aligned currents in the south polar cusp and their relationship to the interplanetary magnetic field [1978, eng] **K-21058**
Ikeda, H.
Antarctic sightseeing flight by Air New Zealand [1978, jap] **A-19775**
Il'ichev, E.F.
Using krill meal as feed [1966, rus] **A-20869**
Il'ichev, V.D.
Adaptations in penguins [1977, rus] **B-19533**
Basic reading list on penguins (1954-1974) [1977, rus] **B-19542**
Il'in, E.A.
Influence of a stay lasting several months under conditions of hypoxia, hypokinesia and isolation on the temperature of the body and skin surface. [1975, eng] **H-20986**
Imai, T.
Rocket measurements of auroral-zone energetic electrons at Syowa Station, Antarctica. I. Characteristics of electrons under no geomagnetic disturbance [1978, eng] **K-20949**
Observations of auroral-zone precipitating electrons by antarctic rockets [1979, jap] **K-21676**
Data processing for auroral electron analysis [1979, jap] **K-21678**
Imamura, M.
Cosmic ray induced Mn-53 in Yamato-7301(j), -7305(k) and -7304(m) meteorites [1978, eng] **E-19930**
Immel, R.
Micromanganese nodules in deep-sea sediments: uranium-isotopic evidence for post-depositional origin [1976, eng] **E-19315**
Inada, A.
Recollections of JARE's early days [1978, jap] **A-19770**
Inan, U.S.
Nonlinear pitch angle scattering of energetic electrons by coherent VLF waves in the magnetosphere [1978, eng] **K-20535**
ISEE-1 satellite observations of signals from the Siple transmitter [1978, eng] **K-21627**
Industries et travaux d'outre-mer
French southern and antarctic territories, 1772-1972 [1973, fre] **A-20241**
Inoue, K.
Effect of temperature on growth of obligately psychrophilic bacteria [1977, eng] **B-19416**
Some physiological changes of an obligate psychrophile at supermaximum growth temperatures [1977, eng] **B-19417**
Inoue, M.
Measurements of drifting snow at Mizuho Camp, East Antarctica, 1974-75 [1977, eng] **F-19520**
Effects of synoptic scale disturbance on seasonal variations of katabatic winds and moisture transport into Mizuho Plateau [1978, eng] **I-19829**
Institut français du pétrole
Geologic map of Antarctica: 1:2,500,000 [1977, fre] **E-19797**
Interdepartmental Committee for Atmospheric Sciences, Washington, D.C.
National Atmospheric Sciences Program: Fiscal year 1969 [1968, eng] **I-20493**
International Commission on Whaling
Report and papers of the Scientific Committee of the Commission [1975, eng] **B-20655**
International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification, and Other Applications, 1st, Iowa State University, Ames, October 2-6, 1977
Iceberg utilization [1978, eng] **F-20448**
International Symposium on Earth Tides, 7th, Sopron, Hungary, 1973
Proceedings of the 7th International Symposium on Earth Tides [1976, eng] **L-20682**
International Symposium on Isotopes and Impurities in Snow and Ice, Grenoble, Aug. 28-30, 1975
Proceedings [1977, eng] **F-20107**
International Whaling Commission. Committee for Whaling Statistics
International whaling statistics, No.73 [1974, eng] **A-20353**
International whaling statistics, No.74 [1974, eng] **A-20354**
Iordanashvili, T.G.
Determining an astronomical reference point at Molodezhnaya Station, Antarctica [1978, rus] **K-21378**
Ipatov, B.G.
Results of aerogravimetric studies in Antarctica [1975, rus] **L-20382**
Irving, E.
Drift of the major continental blocks since the Devonian [1977, eng] **E-19329**
Tentative paleocontinental maps for the Early Phanerozoic and Proterozoic [1978, eng] **L-20688**
Ishida, T.
Glaciological studies in Mizuho Plateau, East Antarctica, 1969-1975 [1978, eng] **F-19819**
Ishii, T.
Characterization of crust formation on a parent body of achondrites and the moon by pyroxene crystallography and chemistry [1976, eng] **E-20228**
Ishikawa, T.
Antarctic geological map series. Sheet 11 - Cape Hinode [1978, eng] **E-20301**

Ishimaru, T.
Cocconeis diatom on the skin of Franciscana [1977, eng] **B-20094**
Ito, T.
Harpacticus furcatus Lang from the Antarctic Peninsula, with reference to the Copepodid stages (Copepoda: Harpacticoida) [1978, eng] **B-20086**
Itoh, T.
Precipitating electrons observed on board the Japanese antarctic sounding rockets S-310JA-1 and S-310JA-2 [1978, eng] **K-20950**
Observation of precipitating electrons on board the S-310JA-2 [1979, jap] **K-21675**
Ivanov, I.P.
Movement of the ice sheet around Mirnyy Station [1978, rus] **F-20743**
Antarctic ice sheet deformation [1978, rus] **F-20744**
Ivanov, K.G.
Electric field of polar caps under the assumption that the magnetopause is an anisotopic rotational discontinuity [1975, eng] **K-21163**
Ivanov, K.N.
Free-atmosphere energy characteristics over the Drake Passage in the summer of 1976 [1978, rus] **I-20644**
Results of a vertical atmospheric profile on the Bellingshausen-Molodezhnaya route (Nov. 1973) [1978, rus] **I-20741**
Ivanov, N.I.
Observations of water temperature variations in the Drake Passage, summer 1976 [1978, rus] **J-20639**
Ivashin, M.V.
Principles and methods of whaling regulation [Pt.1] [1977, rus] **A-21712**
On reproduction of the minke whale *(Balaenoptera acutorostrata* Lac. 1804) in the Indian Ocean sector of the Antarctic [1976, eng] **B-20153**
Some cases of embryogenic pathology in the lesser rorqual *Balaenoptera acutorostrata* (Cetacea, Balaenopteridae) from the Indian Ocean sector of Antarctica [1977, rus] **B-21439**
Ivchenko, V.N.
Television system for observation of artificial aurorae in the conjugate region during the ARAKS experiment [1978, eng] **K-21421**
Ivchenko, V.O.
Wind drift of antarctic sea ice [1977, eng] **F-19788**
Iwabuchi, M.
Conversational system of spectrum analysis by the use of graphic display [1978, jap] **A-20826**
Construction of polar data-base system [1978, jap] **A-20830**
Data acquisition from EXOS-A (Kyokkô) at Syowa Station, Antarctica [1978, jap] **I-20827**
Iwashima, K.
Distribution of trace elements around Syowa Station. 1. Particulate arsenic content [1977, jap] **I-19290**
Jackson, B.
Atmospheric processes and energy transfers at the South Pole [1977, eng] **I-19700**
Jackson, T.L.
International Weddell Sea Oceanographic Expedition, 1976: tritium results [1977, eng] **J-19620**
Tritium and carbon-14 distributions in McMurdo Sound, 1977 [1978, eng] **J-21545**
Jacob, J.
Chemotaxonomical relationships between penguins and tubenoses [1976, eng] **B-21252**
Jacobs, S.
Physical oceanography of the Ross Sea [1978, eng] **J-21553**
Jacobs, S.S.
Effect of glacial ice melting on the Antarctic Surface Water [1979, eng] **E-21657**
Ross Ice Shelf Project: physical oceanography [1977, eng] **J-19621**
Observations on the southwest Indian/Antarctic Ocean [1977, eng] **J-21024**
Circulation and melting beneath the Ross Ice Shelf [1979, eng] **J-21098**
Jacques, G.
Antiprod 1 cruise, *Marion Dufresne*, 1-28 March, 1977 [1978, fre] **J-21272**
Jamjoom, M.O.
Delivery of icebergs to Saudi Arabia—an assessment [1978, eng] **F-20479**
Japan. Radio Research Laboratories
Ionospheric data at Syowa Base (Antarctica). August 1961-January 1962, Ion. Ant.-6 [1969, eng] **K-19384**
Ionospheric data at Syowa Base (Antarctica). July 1971-December 1971, Ion. Ant.-17 [1972, eng] **K-19385**
Ionospheric data at Syowa Station (Antarctica). July 1972-December 1972, Ion. Ant.-19 [1973, eng] **K-19386**
Ionospheric data at Syowa Station (Antarctica). July 1973-December 1973, Ion. Ant.-21 [1974, eng] **K-19387**
Ionospheric data at Syowa Station (Antarctica). January 1974-June 1974, Ion. Ant.-22 [1975, eng] **K-19388**
Ionospheric data at Syowa Station (Antarctica). January 1975-June 1975, Ion. Ant.-24 [1976, eng] **K-19389**
Ionospheric data at Syowa Station (Antarctica). February-July 1966 [1969, eng] **K-19392**
Ionospheric data at Syowa Base (Antarctica). August 1960-January 1961, Ion. Ant.-4 [1968, eng] **K-19961**
Ionospheric data at Syowa Base (Antarctica). August 1967-January 1968, Ion. Ant.-10 [1971, eng] **K-19962**
Ionospheric data at Syowa Base (Antarctica). August 1968-January 1969, Ion. Ant.-12 [1970, eng] **K-19963**
Ionospheric data at Syowa Base (Antarctica). February-July 1969, Ion. Ant.-13 [1969, eng] **K-19964**
Ionospheric data at Syowa Base (Antarctica). August 1969-January 1970, Ion. Ant.-14 [1970, eng] **K-19965**
Ionospheric data at Syowa Base (Antarctica). February 1970-January 1971, Ion. Ant.-15 [1972, eng] **K-19966**
Ionospheric data at Syowa Station (Antarctica). January 1971-June 1971, Ion. Ant.-16 [1972, eng] **K-19967**
Ionospheric data at Syowa Station (Antarctica). January 1973-June 1973, Ion. Ant.-20 [1973, eng] **K-19968**
Ionospheric data at Syowa Station (Antarctica). July 1974-December 1974, Ion. Ant.-23 [1975, eng] **K-19969**
Ionospheric data at Syowa Station (Antarctica). July 1975-December 1975, Ion. Ant.-25 [1976, eng] **K-19970**
Ionospheric data at Syowa Station (Antarctica). January 1976-June 1976, Ion. Ant.-26 [1976, eng] **K-19971**
Japan. Science Council. National Antarctic Committee
Japanese antarctic research 1978 report [1978, eng] **A-20800**
Japanese Antarctic Research Expedition
Antarctic meteorological data. Vol.16. Meteorological data at the Syowa Station in 1975 [1975, eng] **I-19943**
Antarctic meteorological data. Vol.17. Meteorological data at the Syowa Station in 1976 [1976, eng] **I-19944**
Antarctic meteorological data. Special volume [1978, eng] **I-19945**
Records of all-sky camera photographs Syowa Station, Antarctica in 1976 [1978, eng] **K-20516**
Jaramillo, E.
Aega antarctica Hodgson and *Plakarthrium typicum* Chilton in South Bay, Chilean Antarctic (Crustacea, Isopoda) [1977, spa] **B-20912**
Jarosewich, E.
Eleven new meteorites from Antarctica, 1976-1977 [1978, eng] **E-21124**
Jauch, H.
Research on krill [1978, ger] **B-20287**
Jedwab, J.
Copper, zinc and lead minerals suspended in ocean waters [1979, eng] **J-21127**
Jeffrey, L.M.
C-13 change analysis of oceanic particulate organic matter [1973, eng] **J-20270**
Some observations on the stable carbon isotope composition of dissolved and particulate organic carbon in the marine environment [1978, eng] **J-20579**
Jehl, J.R., Jr.
Ornithological research between Argentina and South Georgia [1977, eng] **B-19603**
Jenior, M.M.
Energy conservation, management, water quality, legal and socio-political aspects of iceberg utilization [1978, eng] **F-20490**
Jenkin, J.F.
Corybas macranthus (Hook.f.) Reichb.f. (Orchidaceae), a new record for Macquarie Island [1978, eng] **B-21284**
Jenkins, D.G.
Gueinbelitria samwelli Jenkins, a new species from the Oligocene of the Southern Hemisphere [1978, eng] **B-20537**
Jenkins, R.J.F.
New giant penguin from the Eocene of Australia [1974, eng] **E-20141**
Jenne, R.L.
Climate of the upper air: Southern Hemisphere. Vol.3. Vector mean geostrophic winds: isogon and isotach analyses [1971, eng] **I-20140**
Jennings, P.G.
Tardigrada of Signy Island, South Orkney Islands, with a note on the Rotifera [1976, eng] **B-19555**
Tardigrada from the Antarctic Peninsula and Scotia Ridge region [1976, eng] **B-19561**

Jenssen, D.
Climatic and topographic changes from glaciological data [1978, eng] **I-21109**
Jerde, R.S.
Respiratory virus transmission at McMurdo Station: isolation of rhinoviruses from common colds during the winter fly-in period, 1976 [1977, eng] **H-19591**
Jezek, K.C.
Ross Ice Shelf geophysical survey, 1976-1977 [1977, eng] **F-19686**
Dielectric permittivity of glacier ice measured *in situ* by radar wide-angle reflection [1978, eng] **F-21069**
Jezek, P.A.
Compositions of three tephra layers from the Byrd Station ice core, Antarctica [1978, eng] **E-21239**
Job, J.G.
High efficiency iceberg propulsion systems [1978, eng] **F-20468**
Yields and energetics in moving unprotected icebergs to southern continents [1978, eng] **F-20476**
Numerical modelling of iceberg towing for water supplies—a case study [1978, eng] **F-21337**
Jochum, K.P.
Antarctic meteorite Yamato 74123—a new ureilite [1978, eng] **E-20410**
Johari, G.P.
Effect of hydrostatic pressure on air bubbles in ice [1977, eng] **F-20110**
John B.S.
Coastal geomorphology of high latitudes [1975, eng] **E-20692**
Ice age, past and present [1977, eng] **F-19863**
Johnsen, S.J.
Stable isotope homogenization of polar firn and ice [1977, eng] **F-20122**
Stable isotope profile through the Ross Ice Shelf at Little America V, Antarctica [1977, eng] **F-20125**
Johnson, A.W.
Implications of outer space technology on development in meteorology and meteorological services [1975, eng] **I-20859**
Johnson, B.D.
Spreading history of the eastern Indian Ocean and India's northward flight from Antarctica and Australia: Discussion and reply [1978, eng] **E-20529**
Johnson, G.L.
Outcrops, currents and facies in the east Pacific antarctic zone (Bellingshausen and Amundsen seas) [1977, fre] **J-20863**
Abyssal traces and megafauna: comparison of productivity, diversity and density in the Arctic and Antarctic [1978, eng] **J-21452**
Johnson, J.A.
Model of narrow jets in a zonal ocean [1978, eng] **J-20709**
Johnson, L.
Report on an archaeological expedition in Magallanes (Dec. 14, 1976—Jan. 6, 1977) [1976, spa] **E-21329**
Johnson, R.M.
Taxonomy of antarctic bacteria from soils and air primarily of the McMurdo Station and Victoria Land dry valleys region [1978, eng] **B-20901**
Johnson, R.N.
Magnetospheric dynamics programs at Vostok Station [1977, eng] **K-19718**
Johnston, I.A.
Molecular mechanisms of temperature adaptation in fish myofibrillar adenosine triphosphatases [1977, eng] **B-19448**
Johnstone, G.W.
Giant-petrels in the South Atlantic: new data from Gough Island [1976, eng] **B-19899**
Ornithological observations in the Australian sector of the Southern Ocean [1976, eng] **B-20053**
Interbreeding by *Macronectes halli* and *M. giganteus* at Macquarie Island [1978, eng] **B-21316**
Outlying islands of Macquarie Island [1978, eng] **E-20847**
Joint U.S. Polex Panel
U.S. contribution to the Polar Experiment (POLEX). Part 1. POLEX-GARP (North). Part 2. POLEX-GARP (South) [1974, eng] **I-21467**
Jones, B.J.
Follow the band. Southern giant petrel 5022741 [1974, eng] **B-20357**
Jones, E.
Ecology of the feral cat, *Felis catus* (L.), (Carnivora: Felidae) on Macquarie Island [1977, eng] **B-19750**
Jones, L.M.
Study of strontium isotopes in lakes and surficial deposits of the ice-free valleys, Southern Victoria Land, Antarctica [1978, eng] **E-20164**
Jones, N.V.
Paramonostomum signiensis n.sp. (Trematoda: Notocotylidae) from the Sheathbill, *Chionis alba* (Gmelin), at Signy Island, South Orkney Islands [1969, eng] **B-19339**
Trematode parasites of the Sheathbill, *Chionis alba* (Gmelin), from Signy Island, South Orkney Islands [1968, eng] **B-19340**
Nematode and acanthocephalan parasites of the Sheathbill, *Chionis alba* (Gmelin), at Signy Island, South Orkney Islands and a summary of host parasite relationships in the Sheathbill [1969, eng] **B-19342**
Jones, S.J.
Effect of hydrostatic pressure on air bubbles in ice [1977, eng] **F-20110**
Jones, T.B.
Radio wave Doppler studies of the antarctic ionosphere [1977, eng] **K-19478**
Simultaneous occurrence of short period ionospheric and magnetic oscillations in Antarctica [1977, eng] **K-19716**
Jörgensen, P.M.
Foliose and fruticose lichens from Tristan da Cunha [1977, eng] **B-19455**
Jouzel, J.
Distribution of artificial tritium in firn samples from East Antarctica [1977, eng] **F-20116**
Joyce, T.M.
Stirring processes within the antarctic Polar Front Zone [1977, eng] **J-19626**
Anatomy of the Antarctic Polar Front in the Drake Passage [1978, eng] **J-21048**
Junge, C.E.
Processes responsible for the trace content in precipitation [1977, eng] **F-20111**
Jurdy, D.M.
Alternative model for early Tertiary absolute plate motions [1978, eng] **E-21288**
Kabata, Z.
Parasitic Copepoda of fishes [1965, eng] **B-19955**
Kable, E.J.D.
Geology and geochemistry of Bouvet Island [1976, eng] **E-20146**
Kagei, N.
On the examination against the parasites of antarctic krill, *Euphausia superba* [1978, eng] **B-21650**
Kaharoeddin, F.A.
USNS *Eltanin:* an inventory of core location data with core location maps and cruise 55 core descriptions [1977, eng] **E-19353**
ARA *Islas Orcadas* cruise 0775 sediment descriptions [1977, eng] **E-19354**
Basal sediment ages of Islas Orcadas cruise 11 piston-cores [1978, eng] **E-21559**
Kaiser, T.R.
Very low frequency electromagnetic phenomena: whistlers and micropulsations [1977, eng] **K-20282**
Kalikhman, M.IA.
Temperature and wind velocity variations in the winter polar mesosphere [1974, eng] **I-20135**
Kallio, P.
Photosynthesis in mosses and lichens [1975, eng] **B-20399**
Kamada, T.
S-310JA-1 rocket observation of VLF emission spectra at Syowa Station in Antarctica [1978, eng] **K-20953**
Observations of wave phenomena in the polar ionosphere by S-210JA-19 rocket [1978, eng] **K-20954**
Kamaguchi, A.
K-Ar age of Yamato meteorite, Yamato-74190-01(L) [1978, eng] **E-19932**
Kambu, F.
Investigations of auroral x-radiation in the Kerguelen-Arkhangel'skaya oblast magnetically conjugate regions [1970, eng] **K-20698**
Kamenev, E.N.
Tectonic zonation and geological evolution of Antarctica [1978, rus] **E-20674**
Antarctic metamorphic facies [1978, rus] **E-21700**
Kamenev, V.M.
Ecology of emperor penguins of the Haswell Archipelago, East Antarctica [1977, rus] **B-19540**
Silver-grey fulmar *(Fulmarus glacialoides)* of the Haswell Archipelago [1978, rus] **B-20729**
Kamide, Y.
Recent progress in observational studies of electric fields and currents in the polar ionosphere: a review [1979, jap] **K-21679**

Kaminuma, K.
Activities of Japanese party in McMurdo Sound area 1976-77 [1977, eng] **A-19529**
New computer system of the National Institute of Polar Research [1977, eng] **A-19530**
Documents retrieval system at National Institute of Polar Research [1978, eng] **A-20089**
Report on the 3rd Symposium on Antarctic Geology and Geophysics [1978, jap] **A-20440**
Field surveys on Cape Ryugu, East Antarctica in 1977-1978 [1978, jap] **A-20829**
Programs and profiles of the 19th JARE, 1977-1978 [1978, jap] **D-19774**
Volcanic and seismic activity at Mount Erebus, Antarctica [1976, jap] **E-19278**
Modes of gravity anomaly distributions in relation to the crustal structure of the antarctic continent [1978, eng] **L-20085**
Seismological bulletin of Syowa Station, Antarctica, 1976 [1978, eng] **L-20092**

Kamioka, S.
Extinction coefficient of light of cores drilled at Mizuho Station, East Antarctica [1978, eng] **F-21306**

Kanda, Y.
Variations of trace elements in the hair of wintering members of the Japanese Antarctic Research Expedition [1977, jap] **H-19300**

Kaneko, O.
Auroral simulation experiments with a high power electron beam [1979, jap] **K-21677**

Kanonidi, Kh.D.
Magnetic quiet-day solar daily variations in magnetically conjugate regions [1977, eng] **K-19571**
Magnetic quiet-day solar daily variations in magnetically conjugate regions [1977, eng] **K-21398**

Karachun, A.M.
Radiospectrograph in the frequency range of 25 to 50 megahertz [1978, eng] **K-21424**

Karasawa, S.
Chemical analysis of soil in East Ongul Island, Antarctica [1977, jap] **E-19295**
Diatom flora and environmental factors in some freshwater ponds of East Ongul Island [1977, jap] **E-19296**
Sulfur dioxide and fall dust during summer season at Syowa Station, Antarctica [1977, jap] **I-19291**

Karczewski, J.F.
Wave measurements in the ARAKS experiment [1978, eng] **K-21412**
Attitude measurement with Hall-effect magnetometers [1978, eng] **K-21419**

Kärenlampi, L.
Photosynthesis in mosses and lichens [1975, eng] **B-20399**

Karl, D.M.
Microbial distribution and activity in and around McMurdo Sound [1977, eng] **B-19613**
Microbial life beneath the Ross Ice Shelf [1978, eng] **B-21578**

Karlén, W.
Reconnaissance of the glacial geology of Hobbs Coast and Ruppert Coast, Marie Byrd Land [1978, eng] **E-21529**

Karlov, V.A.
Functional hormonal activity of the adrenals and sympathetic adrenal system during antarctic acclimatization [1978, rus] **H-21037**

Karpova, V.M.
Feasibility of using satellite cloud-cover data to refine H-500 field analysis in the Southern Hemisphere [1975, rus] **I-20545**

Kashurko, M.S.
Preliminary results of oblique-incidence sounding of the ionosphere on a Moscow-Antarctica path [1978, rus] **K-20767**
Preliminary results of studies of multi-trajectory signals on the Moscow-Molodezhnaya path [1978, rus] **K-20768**
Auroral absorption at Molodezhnaya Station in 1973 [1978, rus] **K-20769**
Results of field intensity measurements of short-wave exact time radio stations at Molodezhnaya [1978, rus] **K-20771**

Kato, K.
Oxygen isotopic composition of the surface snow in Mizuho Plateau [1978, eng] **F-19838**
Factors controlling oxygen isotopic composition of fallen snow in Antarctica [1978, eng] **F-19880**
Stratigraphic analyses of firn and ice at Mizuho Station [1978, eng] **F-21299**
Oxygen isotopic composition in the cores from Mizuho Station [1978, eng] **F-21310**

Katsufrakis, J.
Experiment communication and data transmission through the ATS-3 synchronous satellite [1977, eng] **K-19710**

Katsufrakis, J.P.
Siple/Roberval VLF transmitting experiments [1977, eng] **K-19711**
Controlled wave-particle interaction experiments [1978, eng] **K-20295**
VLF line radiation in the Earth's magnetosphere and its association with power system radiation [1975, eng] **K-20507**
Wave-induced particle precipitation effects at Siple Station [1978, eng] **K-21628**

Kawaguchi, S.
Meteorological data at Mizuho Camp, Antarctica in 1976-1977 [1977, eng] **I-19360**
Meteorological data at Mizuho Station, Antarctica in 1977-1978 [1978, eng] **I-20999**

Kawamura, A.
On the food of Bryde's whales caught in the South Pacific and Indian Oceans [1977, eng] **B-20093**
On the northern extreme of the pack-ice edge observed by whaling vessels in the summer of the antarctic seasons 1957/58-1962/63 [1977, eng] **F-20095**

Kawasaki, I.
Food and logistics material for the polar traverse [1975, eng] **G-20990**

Kawashima, N.
Auroral simulation experiments with a high power electron beam [1979, jap] **K-21677**

Kaya, N.
Rocket observation of keV electron fluxes at Syowa Station [1978, eng] **K-20951**
Modified electron spectrometer for medium energy [1978, eng] **K-20952**

Kaya, S.
Decision to create JARE [1978, jap] **A-19761**

Kazarian, R.
Media representatives in Antarctica [1977, eng] **A-19736**

Kaznacheev, V.P.
Problems of adaptation and antarctic support systems [1978, rus] **H-21032**

Keany, J.
Pliocene-early Pleistocene paleoclimatic history recorded in antarctic-subantarctic deep-sea cores [1972, eng] **E-19423**
Paleoclimatic trends in Early and Middle Pliocene deep-sea sediments of the Antarctic [1978, eng] **E-20552**
Comparison of radiolarian/planktonic foraminiferal paleooceanography of the subantarctic Indian Ocean [1978, eng] **E-20804**

Keeling, C.D.
Atmospheric carbon dioxide and radiocarbon in the natural carbon cycle. I. Quantitative deductions from records at Mauna Loa Observatory and at the South Pole [1973, eng] **I-20069**

Keeton, J.R.
Field guide for portland cement concrete construction in Antarctica [1969, eng] **G-21200**

Kehler, W.F.
Aluminum home for researchers [1977, ger] **G-19367**

Keil, K.
Petrology and K-Ar age of volcanic tuff and ash from the Walvis Seamount province, DSDP Site 259, Leg 39 [1977, eng] **E-19850**

Keliher, T.E.
Comparison between derived internal dielectric properties and radio-echo sounding records of the ice sheet at Cape Folger, Antarctica [1978, eng] **F-20356**

Kelley, J.J.
Icebergs - a natural resource [1978, eng] **F-20451**
Role of the polar regions in global climate change [1978, eng] **I-20202**

Kelley, M.C.
Polar cap electric field structures with a northward interplanetary magnetic field [1979, eng] **K-21321**

Kellogg, D.
Fresh-water diatoms from perched deltas in Taylor Valley, Antarctica [1978, eng] **E-21517**

Kellogg, D.E.
Marine microfossils on the McMurdo Ice Shelf [1977, eng] **E-19644**
Glacial geologic studies in the McMurdo Sound region [1978, eng] **E-21528**

Kellogg, K.S.
Paleomagnetic results from the Lassiter Coast, Antarctica, and a test for oroclinal bending of the Antarctic Peninsula [1978, eng] **L-20862**

Kellogg, T.
Fresh-water diatoms from perched deltas in Taylor Valley, Antarctica [1978, eng] **E-21517**
Kellogg, T.B.
Marine microfossils on the McMurdo Ice Shelf [1977, eng] **E-19644**
Glacial geologic studies in the McMurdo Sound region [1978, eng] **E-21528**
Late Quaternary paleoecology and paleoclimatology inferred from Ross Sea sediments [1978, eng] **E-21575**
Piston coring aboard USCGC *Glacier* in the Ross Sea [1978, eng] **E-21576**
Kellogg, W.W.
Effects of human activities on global climate: a summary, with consideration of the implications of a possibly warmer Earth [1977, eng] **I-19491**
Is mankind warming the Earth [1978, eng] **I-20105**
Effects of human activities on global climate; a summary, with consideration of the implications of a possibly warmer earth [1977, eng] **I-20957**
Global influences of mankind on the climate [1978, eng] **I-21191**
Kelly, C.
RGS archives: Part 3. America, the Antarctic and the Arctic [1976, eng] **A-20006**
Kelly, G.A.M.
Interpretation of satellite cloud mosaics for Southern Hemisphere analysis and reference level specification [1978, eng] **I-20884**
Kelly, M.D.
Bacterial flora of antarctic krill *(Euphausia superba)* and some of their enzymatic properties [1978, eng] **B-20504**
Kemp, E.M.
Carboniferous and Permian palynostratigraphy in Australia and Antarctica: a review [1977, eng] **E-20396**
Tertiary climatic evolution and vegetation history in the southeast Indian Ocean region [1978, eng] **I-20184**
Kemp, N.R.
New Triassic vertebrates from the Fremouw Formation of the Queen Maud Mountains [1978, eng] **E-21514**
Kennett, J.P.
Development of planktonic biogeography in the southern ocean during the Cenozoic [1978, eng] **B-21562**
Biometric differentiation between Recent *Globigerina bulloides* and *Globigerina falconensis* in the southern Indian Ocean [1977, eng] **E-19418**
Test size variation in Globigerina bulloides in response to Quaternary paleoceanographic changes [1978, eng] **E-20631**
Late Cenozoic oxygen and carbon isotopic history and volcanic ash stratigraphy: DSDP Site 284, South Pacific [1979, eng] **E-21180**
Cenozoic microfossil datums in antarctic to subantarctic deep-sea sedimentary sequences [1978, eng] **E-21563**
Modern zoogeography of antarctic planktonic microfossils [1978, eng] **E-21567**
Late Quaternary paleoclimatic applications of mean-size variations in *Globigerina bulloides* d'Orbigny in the southern Indian Ocean [1978, eng] **E-21571**
Deep sea drilling contributions to studies of the evolution of the southern ocean and antarctic glaciation [1977, eng] **J-19638**
Kenoyer, G.
Piston coring aboard USCGC *Glacier* in the Ross Sea [1978, eng] **E-21576**
Kerr, R.A.
Plate tectonics: hot spot implicated in ridge formation [1978, eng] **E-20851**
Kerry, K.
Antarctic saline lakes—stable isotopic ratios, chemical compositions and evolution [1979, eng] **E-21126**
Kerry, K.R.
Ornithological observations in the Australian sector of the Southern Ocean [1976, eng] **B-20053**
Kersley, L.
Comparison of protonospheric electron content measurements from the American and European sectors [1978, eng] **K-19909**
Kevan, P.
Anthophilous springtails (Collembola) from the Alaskan north slope, from Signy Island, Antarctica, and from near Ottawa, Ontario [1978, eng] **B-21402**
Keys, J.R.
Tephra and debris layers in the Skelton Névé and Kempe Glacier, south Victoria Land, Antarctica [1977, eng] **E-20180**
Kheĭsin, D.E.
Sea ice [1977, eng] **F-19333**
Wind drift of antarctic sea ice [1977, eng] **F-19788**
Khliupin, N.I.
Results of aerogravimetric studies in Antarctica [1975, rus] **L-20382**
Khodakov, V.G.
Rate of ice melting in water [1978, rus] **F-21390**
Khodzha-Akhmedov, Ch.L.
Polar cap absorption in Antarctica in 1967 [1973, eng] **K-20524**
Preliminary results of oblique-incidence sounding of the ionosphere on a Moscow-Antarctica path [1978, rus] **K-20767**
Preliminary results of studies of multi-trajectory signals on the Moscow-Molodezhnaya path [1978, rus] **K-20768**
Auroral absorption at Molodezhnaya Station in 1973 [1978, rus] **K-20769**
Feasibility of using a quartz clock for determining phase drift of very low-frequency radiowaves [1978, rus] **K-20770**
Results of field intensity measurements of short-wave exact time radio stations at Molodezhnaya [1978, rus] **K-20771**
Results and prospects of Soviet geophysical research in the Antarctic [1978, rus] **L-20675**
Khofmann, I.
Comparison of geological structure of southeast Indostan and Sri Lanka with Enderby Land, Mac. Robertson Land and Princess Elizabeth Land in East Antarctica [1978, rus] **E-21699**
Khriashcheva, N.IU.
Assessment of the possibility of satisfying the information requirement at an antarctic station [1977, rus] **H-19891**
Kidd, R.B.
Indian Ocean sediment distribution since the Late Jurassic [1978, eng] **E-19876**
Kightley, S.P.J.
Influence of reindeer on the vegetation of South Georgia: 1. Long-term effects of unrestricted grazing and the establishment of exclosure experiments in various plant communities [1976, eng] **B-19560**
Kihata, M.
On the examination against the parasites of antarctic krill, *Euphausia superba* [1978, eng] **B-21650**
Kikuchi, K.
Snow crystals at the South Pole [1975, jap] **F-20051**
Kilham, P.
Ecology of marine planktonic diatoms [1977, eng] **B-21055**
Killworth, P.D.
Some models of bottom water formation [1977, eng] **J-20031**
Formation and interleaving of abyssal water masses off Wilkes Land, Antarctica [1978, eng] **J-20161**
Kimura, I.
S-310JA-1 rocket observation of VLF emission spectra at Syowa Station in Antarctica [1978, eng] **K-20953**
Kimura, M.
Petrological studies of Yamato-74 meteorites (2) [1978, eng] **E-19926**
Kirk, R.
Snow [1978, eng] **A-19862**
Kirsten, T.
Terrestrial ages of four Allan Hills meteorites: consequences for antarctic ice [1979, eng] **E-21104**
Kirwan, A.D., Jr.
Surface layer kinematics of the circumpolar current as inferred from Nimbus 6 [1978, eng] **J-21546**
Kiselev, V.I.
Chemical composition of body parts of the antarctic sperm whale [1972, rus] **B-20809**
Kiselevskiĭ, M.A.
Some features of formation of oxygen isotopic composition in East Antarctic snow cover [1978, rus] **F-21486**
Kislitsyn, S.P.
Features of radiation balance at the water surface in the Drake Passage, summer 1976 [1978, rus] **J-20645**
Kitchell, J.A.
Abyssal traces and megafauna: comparison of productivity, diversity and density in the Arctic and Antarctic [1978, eng] **J-21452**
Kitchell, J.F.
Abyssal traces and megafauna: comparison of productivity, diversity and density in the Arctic and Antarctic [1978, eng] **J-21452**
Kizaki, K.
Antarctic geological map series. Sheet 17—Northern Yamato Mountains (1) Mt. Fukushima [1978, eng] **E-20302**
Kleĭmenova, N.G.
VLF signal observations at Molodezhnaya Station [1978, rus] **K-20773**
Magnetic activity and subauroral ELF-VLF chorus [1975, eng] **K-21164**

Klekowski, R.Z.
Biology and respiration of the antarctic Amphipoda *Paramoera walkeri* Stebbing in the summer [1973, eng] **B-20218**
Kleppe, J.A.
Use of an X-band radar and satellite communications link for studies of air-sea interactions on the Antarctic Peninsula [1978, eng] **G-19757**
Kligfield, R.
Deformation, serpentinization and emplacement of a dunite complex, Gibbs Island, South Shetland Islands: possible fracture zone tectonics [1977, eng] **E-19322**
Klimov, L.V.
Geological structure of the western part of Enderby Land [1968, eng] **E-20339**
Klinker, L.
Long-term oxygen consumption tests at constant physical activity on persons wintering over in the Antarctic [1978, ger] **H-21241**
Klobuchar, J.A.
Comparison of protonospheric electron content measurements from the American and European sectors [1978, eng] **K-19909**
Klopov, V.R.
Human adaptation to unusual living conditions [1978, rus] **H-21031**
Klouda, G.A.
Interhemispheric comparison of changes in the composition of atmospheric precipitation during the Late Cenozoic era [1977, eng] **F-20045**
Klur, V.IU.
Antiviral resistance under antarctic winter conditions [1978, rus] **H-20774**
Necessity for activating immune resistance under antarctic conditions [1978, rus] **H-20775**
Klyszejko, B.
Carotenoids in fish. 14. The carotenoid content in the flesh of certain species from the Antarctic [1978, eng] **B-21237**
Knapp, M.B.
USNS *Eltanin:* an inventory of core location data with core location maps and cruise 55 core descriptions [1977, eng] **E-19353**
Knauss, K.G.
Uranium in open ocean: concentration and isotopic composition [1977, eng] **J-19516**
Knopoff, L.
Free oscillations of the Earth and tilt at the South Pole [1978, eng] **L-21526**
Knox, G.A.
Comparison between the benthos of the Southern Ocean and the North Polar Ocean with special reference to the amphipoda and the polychaeta [1977, eng] **B-20042**
Kobayashi, S.
Observation of the atmospheric surface layer on bare ice on the circumference of the Yamato Mountains, Antarctica [1978, jap] **F-20083**
Vertical structure of katabatic winds in Mizuho Plateau [1978, eng] **I-19826**
Observations of sea-salt particles in the air in Mizuho Plateau [1978, eng] **I-19828**
Effects of synoptic scale disturbance on seasonal variations of katabatic winds and moisture transport into Mizuho Plateau [1978, eng] **I-19829**
Kochergin, V.P.
Numerical simulation of the baroclinic world ocean [1977, rus] **J-19369**
Kochetkova, S.N.
Some features of formation of oxygen isotopic composition in East Antarctic snow cover [1978, rus] **F-21486**
Kock, K.-H.
Studies on possible game fish resources *(Dissostichus eleginoides* and *D. mawsoni)* in the antarctic sector of the Atlantic Ocean [1976, ger] **A-20966**
Krill catch in the Atlantic sector of the Antarctic [1977, ger] **A-20968**
Fish without blood [1977, ger] **B-19817**
On the occurrence of the parasitic copepod *Eubrachiella antarctica* on some antarctic fish [1977, eng] **B-20558**
Krill and hydrographic conditions off the Antarctic Peninsula [1978, eng] **B-21348**
Fishery biological investigations [1978, ger] **B-21447**
Kodama, M.
Rocket measurements of auroral-zone energetic electrons at Syowa Station, Antarctica. I. Characteristics of electrons under no geomagnetic disturbance [1978, eng] **K-20949**
Observations of auroral-zone precipitating electrons by antarctic rockets [1979, jap] **K-21676**
Data processing for auroral electron analysis [1979, jap] **K-21678**
Measurements of electric field and auroral X-rays with antarctic balloons [1979, jap] **K-21682**
Kohn, B.P.
Stratigraphy of the Taylor and lower Victoria groups (Beacon Supergroup) between the MacKay Glacier and Boomerang Range, Antarctica [1977, eng] **E-20175**
Kohnen, H.
Ultrasonic measurements on ice cores from Ross Ice Shelf, Antarctica, drill hole [1977, eng] **F-19690**
Earth science investigations on the sixth continent [1978, ger] **F-20865**
Ultrasonic measurements on deep ice cores from Antarctica [1978, eng] **F-21530**
Kokubun, S.
Activity of the summer party of the 18th JARE in 1976-1977 [1978, jap] **D-20088**
Precipitating electrons observed on board the Japanese antarctic sounding rockets S-310JA-1 and S-310JA-2 [1978, eng] **K-20950**
Observation of precipitating electrons on board the S-310JA-2 [1979, jap] **K-21675**
Kolbig, J.
Measurements of surface ozone at Mirnyy, Antarctica [1978, ger] **I-21290**
Kolla, V.
Recent sedimentation in the southeast Indian Ocean with special reference to the effects of Antarctic Bottom Water circulation [1978, eng] **J-19992**
Kolosova, N.V.
Wind regime features on Deception Island [1978, rus] **I-20728**
Kolpack, R.L.
Oceanography and sedimentology of Drake Passage, Antarctica [1968, eng] **J-19270**
Komatsu, S.
Magnetic field observations with sounding rockets [1979, jap] **K-21683**
Komatsu, S.K.
Proteins of cold-adapted Antarctic fishes [1969, eng] **B-19288**
Komova, V.V.
Ice conditions encountered by the d/e *Ob'* (1972/73) [1978, rus] **F-20736**
Komro, F.
Early winter storms in the northwestern Weddell Sea [1978, eng] **I-21610**
Koons, H.C.
Stimulation of Pc1 micropulsations by controlled VLF transmissions [1977, eng] **K-21477**
Koops, H.
Fermented alkane and krill meal as a fish meal substitute in trout fodder [1977, ger] **B-20969**
Kooyman, G.L.
Diving behavior of fur seals, *Arctocephalus gazella,* and king penguins, *Aptenodytes patagonica,* near South Georgia Island [1977, eng] **B-19596**
Blood characteristics related to oxygen carrying capacity in birds from South Georgia Island [1977, eng] **B-19602**
General physiology of the Pinnipedia [1968, eng] **B-20868**
Seal and emperor penguin survey, Victoria Land Coast [1978, eng] **B-21596**
Blood chemistry of freely diving Weddell seals [1978, eng] **B-21598**
Koptev, A.P.
Methods and results of studying radiation properties of snow-firn covers [1977, rus] **I-20426**
Methods and results of the gradient and micropulsation measurements of air temperature and wind velocity [1977, rus] **I-20427**
Collecting and processing hydrometeorological data in polar regions [1978, rus] **I-20613**
Kopylenko, L.R.
Amino acid content of krill and krill meal [1970, rus] **B-20819**
Kopylov, IU.M
Investigations of auroral x-radiation in the Kerguelen-Arkhangel'skaya oblast magnetically conjugate regions [1970, eng] **K-20698**
Korabel'nikov, L.V.
Summer distribution of Procellariiformes in the Southern Ocean [1975, rus] **B-21370**
Koriakin, E.D.
Regional gravity anomalies in the Atlantic Ocean [1978, rus] **L-19498**
Catalog of gravity stations in Antarctica (Explanatory notes and charts) [1973, eng] **L-21089**
Kornilov, N.A.
Circumpolar countercurrent of the Southern Ocean [1978, eng] **J-21166**

Korolev, P.A.
Glaciological studies on the IAGP program in a new area of Eastern Antarctica [1977, rus] **F-20172**
Glaciological investigations along the Mirny-Pionerskaya-Dome C profile [1978, rus] **F-21389**
Koroleva, N.I.
Investigating atmospheric aerosol transfer by means of geochemical study of the antarctic ice sheet [1976, rus] **F-19285**
Sulfate content in the antarctic ice cap [1977, eng] **F-21122**
Korotkevich, E.S.
Soviet research in the Antarctic [1977, rus] **A-20191**
Twenty years of Soviet research in the Antarctic [1978, rus] **A-21686**
Isotope analysis of ice cores from Vostok station (Antarctica), to the depth of 950 m [1977, eng] **F-20130**
Antarctic glaciation and its role in world water regime and climate formation [1978, rus] **F-20673**
Results of ice sheet vertical structure studies in the Vostok Station area [1978, rus] **F-20681**
Drilling through shelf ice near Novolazarevskaya Station [1978, rus] **F-20724**
Symposium on Physics and Chemistry of Ice and the meeting of the Council of the International Antarctic Glaciological Project [1978, rus] **F-21388**
Korshover, J.
Global temperature variation, surface-100 mb: an update into 1977 [1978, eng] **1-20883**
Korzhuev, P.A.
Physiological and biochemical features of the crested penguin [1977, rus] **B-19539**
Korzun, L.P.
Functional morphology of feeding apparatus in penguins [1977, rus] **B-19534**
Korzun, V.I.
World water balance and water resources of the earth [1978, eng] **E-20931**
Kosachev, I.D.
Brief geographical and medical description of Leningradskaya Station [1978, rus] **H-21047**
Kosar, W.S.
Research-configured LC-130R airplane [1977, eng] **G-19729**
Kosenko, N.G.
Interaction of the hull of the *Ob'* with compressed ice [1978, rus] **F-20749**
Kosiba, A.
Snow, glaciers, ice sheets [1978, pol] **F-21157**
Kosterin, I.N.
Propagation of shortwave time signals over long-distance radio links [1977, rus] **G-19893**
Kotliakov, V.M.
Meeting of the Committee of the International Antarctic Glaciological Project (IAGP) in 1976 [1977, rus] **F-19576**
Influence of climatic and glaciological factors on paleotemperature of continental ice sheets [1976, rus] **F-19973**
Isotope analysis of ice cores from Vostok station (Antarctica), to the depth of 950 m [1977, eng] **F-20130**
Soviet glaciological studies in 1976 [1977, rus] **F-20171**
Antarctic glaciation and its role in world water regime and climate formation [1978, rus] **F-20673**
Soviet glaciological research in 1977 [1978, rus] **F-21202**
Ice budget of Antarctica [1978, eng] **F-21340**
Annotated list of Soviet literature on glaciology for 1975 [1978, rus] **F-21391**
Glaciology in Antarctica on the eve of the 1980's [1978, rus] **F-21695**
Kovach, J.
Strontium isotopic study of sediment from the Ross Sea [1977, eng] **E-19640**
Use of strontium isotopes to study mixing of sediment derived from different sources: the Ross Sea, Antarctica [1978, eng] **E-20513**
Sources and abundance of volcanogenic sediment in piston cores from the Ross Sea, Antarctica [1977, eng] **E-20753**
Rubidium-strontium geochronology of granitic rocks from Mt. Chapman, Whitmore Mountains, West Antarctica [1978, eng] **E-21509**
Kovacs, A.
Dielectric constant and reflection coefficient of the snow surface and near-surface internal layers in the McMurdo Ice Shelf [1977, eng] **F-19682**
Iceberg thickness profiling using an impulse radar [1977, eng] **F-19684**
Subsurface measurements of the Ross Ice Shelf, McMurdo Sound, Antarctica [1977, eng] **F-19689**
Iceberg thickness profiling [1978, eng] **F-19755**
Axial double point-load tests on snow and ice [1978, eng] **F-20067**
Iceberg thickness and crack detection [1978, eng] **F-20457**
Runway site survey, Pensacola Mountains, Antarctica [1977, eng] **G-19368**
Kovalenko, V.I.
Artificial borehole deflection in Antarctica [1977, rus] **F-19884**
Kovaleva, A.A.
Trematodofauna of some mass species of fish in the southwest Atlantic [1975, rus] **B-21324**
New species of trematode parasites in fish of the Falkland-Patagonian region, southwest Atlantic Ocean [1977, rus] **B-21375**
Kovrazhkin, R.A.
Structure of the bursts of auroral protons [1976, rus] **K-19776**
Kozlov, A.N.
Characteristics of the energy balance in three Notothenia species [1975, rus] **B-19497**
Some characteristics of fat metabolism in *Notothenia rossi marmorata* in the prespawning period [1972, rus] **B-20573**
Fecundity of *Notothenia rossi marmorata* and its relation to fat content [1972, rus] **B-20574**
Kozlovskiĭ, A.M.
Effect of coastal morphological features on the formation of underwater ice in antarctic seas [1977, eng] **F-19403**
Some peculiarities of the formation and structure of shore ice along the Amery Ice Shelf [1977, eng] **F-19404**
Some peculiarities and causes of multi-year sea ice formation in the Cosmonaut Sea [1977, eng] **F-19405**
Characteristics of Antarctic coastal pack ice formation [1978, rus] **F-20722**
Kozuka, H.
Variations of trace elements in the hair of wintering members of the Japanese Antarctic Research Expedition [1977, jap] **H-19300**
Kraft, G.T.
Transfer of the New Zealand red alga *Tylotus proliferus* (Gracilariaceae, Gigartinales) to the genus *Gracilaria* [1977, eng] **B-19807**
Krasotkin, A.F.
Cosmic-ray intensity in the near-earth atmosphere and at the surface of the earth [1975, eng] **K-21162**
Krass, M.S.
Thermodynamic model of an external ice shelf [1976, ger] **F-19795**
Crust and upper mantle dynamics in regions of continental glaciation [1969, rus] **L-19855**
Kratkiĭ, V.E.
New data on the distribution of antarctic fishes [1979, eng] **B-21399**
Kravchuk, M.A.
Drake Passage water masses in the summer [1978, rus] **J-20640**
Water mass structure and geostrophic currents on the Antarctica-Africa profile [1978, rus] **J-20650**
Kravtsova, V.I.
Present possibilities of using space information for purposes of glaciology [1977, rus] **F-20157**
Krefft, G.
Results of the research cruises of FRV *Walther Herwig* to South America, 25. *Diplophos rebainsi* n.sp. (Osteichthyes, Stomiatodidei, Gonostomatidae), a new Gonostomatid fish from southern seas [1972, eng] **B-21489**
Results of the research cruises of FRV *Walther Herwig* to South America, 28. *Woodsia meyerwaardeni* spec. nov., a new Gonostomatid from the South Atlantic [1973, ger] **F-21490**
Kressman, R.I.
Radio wave Doppler studies of the antarctic ionosphere [1977, eng] **K-19478**
Riometer studies at South Georgia [1976, eng] **K-19546**
Krinsley, D.
Zeolites in South Atlantic deep-sea sediments [1977, eng] **E-19848**
Krivo, V.M.
Studying personality and psychosocial adjustment in polar workers using a test [1978, rus] **H-21043**
Kroll, J.D.
Cruise data report: R/V *Chain* Cruise 115 Legs 3 and 4, Southlant Expedition [1974, eng] **J-21000**
Kroopnick, P.M.
Cenozoic and Late Mesozoic paleoceanographic and paleoglacial history recorded in circum-Antarctic deep-sea sediments [1977, eng] **J-19261**
Kropotkin, A.P.
Penetration of solar flare protons into the polar caps [1975, eng] **K-21161**

Krutchkoff, R.G.
Ecosystem studies and mathematical model for Lake Bonney, Taylor Valley, southern Victoria Land [1977, eng] **B-19610**
Development and use of a mathematical model for an antarctic lake [1978, eng] **E-21238**
Krylov, V.I.
Biology of the South Shetland Islands leopard seal [1977, rus] **B-19885**
Data on the biology of crabeater seals in the South Shetland Islands [1977, rus] **B-19888**
Kerguelen seals on King George Island [1977, rus] **B-19892**
King George Island southern elephant seals [1978, rus] **B-21464**
Observations on King George Island birds [1978, rus] **B-21465**
Ku, T.-L.
Uranium in open ocean: concentration and isotopic composition [1977, eng] **J-19516**
Kubo, H.
Precipitating electrons observed on board the Japanese antarctic sounding rockets S-310JA-1 and S-310JA-2 [1978, eng] **K-20950**
Observation of precipitating electrons on board the S-310JA-2 [1979, jap] **K-21675**
Kudishkin, V.S.
Interaction of the hull of the *Ob'* with compressed ice [1978, rus] **F-20749**
Results of navigability trials of antarctic ice by the *Ob'* [1978, rus] **G-20739**
Resonant hull vibrations of the *Ob'* when traversing ice cake [1978, rus] **G-20748**
Experimental work on ice vibration in the *Ob'* [1978, rus] **G-20750**
Kudriashov, B.B.
Selecting drills for microbiological studies of deep glacier layers at Vostok Station [1978, rus] **F-20726**
Kuechle, V.
Colonial behavior of antarctic marine mammals in eastern McMurdo Sound [1977, eng] **B-19597**
Colonial behavior of the Weddell seal in eastern McMurdo Sound [1978, eng] **B-21599**
Kuhl, J.
Utilization of krill shells in feeding experiments with rats [1978, ger] **B-20560**
Kuhn, M.
Radiation budget at Plateau Station, Antarctica, 1966-1967 [1977, eng] **I-19337**
Air temperature and two-dimensional wind profiles in the lowest 32 meters as a function of bulk stability [1977, eng] **I-20934**
Stability-related wind spiraling in the lowest 32 meters [1977, eng] **I-20935**
Light transmission and its modification by the inversion and general circulation of the antarctic atmosphere [1973, eng] **I-21493**
Spectroscopic studies at McMurdo, South Pole, and Siple stations during the austral summer 1977-78 [1978, eng] **I-21611**
Kukla, G.J.
Antarctic pack ice cover variations [1977, eng] **F-19683**
Recent changes in snow and ice [1978, eng] **F-21190**
New data on climatic trends [1977, eng] **I-19343**
Kuksa, V.I.
Large-scale characteristics of the distribution of antarctic intermediate waters in the world ocean [1978, eng] **J-20138**
Kuksenko, V.I.
Spatial and temporal characteristics of quasi-biweekly fluctuations in tidal force at high latitudes [1977, rus] **J-20081**
Kulakov, I.IU.
Seasonal variability of Antarctic sea ice extent: its numerical modeling [1977, eng] **F-20889**
Kulitskaia, IA.F.
Determining an astronomical reference point at Molodezhnaya Station, Antarctica [1978, rus] **K-21378**
Kullenberg, G.
Light-scattering observations in frontal zones [1978, eng] **J-20710**
Kumai, M.
Antarctic soil studies using a scanning electron microscope [1978, eng] **E-20106**
Kundla, L.S.
Radiation budget at Plateau Station, Antarctica, 1966-1967 [1977, eng] **I-19337**
Kuo, H.-H,
Topographic effect on the deep circulation and the abyssal oxygen distribution [1978, eng] **J-20249**
Kuperov, L.P.
Effectiveness of collecting meteorological data in Antarctica by means of simultaneous or consecutive querying of stations by shortwave [1977, rus] **I-20169**
Intersection of geomagnetic force lines with the interplanetary magnetic field in the evening portion of the south polar cap [1977, rus] **K-20170**
Results of field intensity measurements of short-wave exact time radio stations at Molodezhnaya [1978, rus] **K-20771**
Results and prospects of Soviet geophysical research in the Antarctic [1978, rus] **L-20675**
Kurasawa, H.
Dry Valley Drilling Project—an international effort [1975, jap] **E-19434**
Volcanoes and volcanic rock in Antarctica [1977, jap] **E-19586**
Geochemistry of Ferrar dolerite, dikes and Cenozoic volcanics of the dry valley region [1978, eng] **E-20367**
Kurbanov, V.V.
Clinical and biochemical studies of human adaptation in central Antarctica as applied to space biology and medicine [1977, rus] **H-19531**
Kurchashov, IU.P.
Method of locating the Pc1 source and hot plasma parameters in the generation region [1979, eng] **K-21381**
Kuroda, K.
Distribution of chlorophyll-*a* contents in the surface water along the course of the *Fuji* to and from Antarctica in 1972-1973 [1978, eng] **J-20087**
Kuroiwa, D.
Extinction coefficient of light of cores drilled at Mizuho Station, East Antarctica [1978, eng] **F-21306**
Kusayer, T.A.
Role of iceberg utilization research and development in enhancing the transfer of technology in Saudi Arabia [1978, eng] **F-20474**
Kushnerevskiĭ, IU.V.
Broad-band wave measurements in the ARAKS experiment [1978, eng] **K-21413**
Kusunoki, K.
Newspaper articles on the JARE with the *Kainan Maru* during her calls at Wellington and Sydney in 1910-1912 [1977, jap] **A-19306**
Ice-coring project at Mizuho Station, East Antarctica, 1970-1975 [1978, eng] **F-21297**
Kuwano, K.
Inactivation of enzymes and chemical change in antarctic krill as a result of boiling [1976, jap] **B-19447**
On the antarctic krill protein concentrate (KPC). 1. Manufacture of the KPC by isopropyl alcohol method and its chemical composition [1977, jap] **B-19511**
Kuwashima, M.
Wave characteristics of magnetic Pi2 pulsations in the auroral region—spectral and polarization studies [1978, eng] **K-20958**
Kvinge, T.
Thermohaline convection in the vicinity of an ice shelf [1977, eng] **J-20034**
Kyle, P.
Immediate report of the Victoria University of Wellington Antarctic Expedition, 1971-1972 [1972, eng] **D-20919**
Kyle, P.R.
Petrogenesis of Ferrar Group rocks [1977, eng] **E-19661**
Tephra and debris layers in the Skelton Névé and Kempe Glacier, south Victoria Land, Antarctica [1977, eng] **E-20180**
Geology and volcanic history of Hut Point Peninsula as inferred from DVDP 1, 3 and 3 drillcores [1978, eng] **E-20368**
K/Ar age determinations on DVDP 1 and 2 core samples [1978, eng] **E-20369**
Significance of gamma-ray, salinity and electrical logs in DVDP boreholes [1978, eng] **E-20371**
Mineralogy and glass chemistry of recent volcanic ejecta from Mt. Erebus, Ross Island, Antarctica [1977, eng] **E-20758**
Compositions of three tephra layers from the Byrd Station ice core, Antarctica [1978, eng] **E-21239**
Volcanic activity at Mt. Erebus, 1977/78 [1978, eng] **E-21522**
Volcanic geology of the lower slopes of Mt. Morning [1978, eng] **E-21523**
Kyle, R.A.
Palynomorph preservation in the Beacon Supergroup of the Transantarctic Mountains [1977, eng] **E-19670**
Carboniferous and Permian palynostratigraphy in Australia and Antarctica: a review [1977, eng] **E-20396**
Palynostratigraphy of the Victoria group of South Victoria Land, Antarctica [1977, eng] **E-20756**

Devonian palynomorphs from the basal Beacon Supergroup of South Victoria Land, Antarctica [1977, eng] **E-20759**

La Brecque, J.
Islas Orcadas cruise 12: Cape Town to Buenos Aires [1977, eng] **J-19633**

La Brecque, J.L.
Falkland escarpment and Agulhas fracture zone: the boundary between oceanic and continental basement at conjugate continental margins [1976, eng] **L-19513**

La Prade, K.E.
Geology of Shackleton Glacier area, Queen Maud Range, Transantarctic Mountains, Antarctica [1969, eng] **E-19287**

Labeyrie, J.
Gif natural radiocarbon measurements VI [1972, eng] **I-19845**

Lagunov, L.L.
Prospects of the utilization of krill and other nonconventional resources of the world ocean [1973, eng] **A-20073**

Lai, S.T.
Polar cap electric field structures with a northward interplanetary magnetic field [1979, eng] **K-21321**

Laird, M.
Immediate report of the Victoria University of Wellington Antarctic Expedition, 1971-1972 [1972, eng] **D-20919**

Lal, D.
Oceanic microcosm of particles [1977, eng] **J-19328**

Lambert, G.
Accumulation of snow and radioactive debris in Antarctica: a possible refined radiochronology beyond reference levels [1977, eng] **F-20117**

Lamontagne, R.A.
Atmospheric trace gases in the southern hemisphere [1973, eng] **I-19484**

Landrum, B.J.
Studies in polar biology [1977, eng] **B-19618**
Polar biological specimens [1978, eng] **B-21641**

Langone, J.
Life at the bottom: the people of Antarctica [1977, eng] **A-20018**

Langway, C.C., Jr.
Polar ice core analysis [1977, eng] **F-19692**
Central ice core storage facility and information exchange [1977, eng] **F-19693**
Interhemispheric comparison of changes in the composition of atmospheric precipitation during the Late Cenozoic era [1977, eng] **F-20045**
Stable isotope profile through the Ross Ice Shelf at Little America V, Antarctica [1977, eng] **F-20125**
Natural enrichment of elements in snow [1978, eng] **F-20391**
Chemistry of 700 years of precipitation at Dye 3, Greenland [1975, eng] **F-20599**
Studies on terrestrial ice cores [1978, eng] **F-21406**
Antarctic ice core recovery [1978, eng] **F-21539**

Lanzerotti, L.J.
Magnetic fluctuations and ionosphere conductivity changes measured at Siple Station [1977, eng] **K-19715**
Upper atmosphere research in Antarctica [1978, eng] **K-20291**
Studies of geomagnetic pulsations [1978, eng] **K-20296**
Association of ULF magnetic variations and changes in ionospheric conductivity during substorms [1978, eng] **K-20531**
Solar-polar coronal holes and the north-south cosmic ray gradient [1978, eng] **K-20627**
Oscillations of the sun and the geomagnetic field [1978, eng] **K-20630**
High time resolution riometer studies of magnetospheric electron precipitation [1978, eng] **K-21623**

Lapina, I.IA.
Soviet glaciological studies in 1976 [1977, rus] **F-20171**
Soviet glaciological research in 1977 [1978, rus] **F-21202**
Annotated list of Soviet literature on glaciology for 1975 [1978, rus] **F-21391**

Lapointe, P.L.
What happened to the high-latitude palaeomagnetic poles [1978, eng] **L-20286**

Larkin, V.G.
Ocean floor structure in the southern Atlantic Ocean [1978, rus] **E-20719**

Larson, R.E.
Atmospheric trace gases in the southern hemisphere [1973, eng] **I-19484**

Lathbury, G.
H.M.S. *Endurance*--Passage to the Antarctic—October 1969-May 1970: Observation of seabirds [1973, eng] **B-19867**

Latyshkevich, A.I.
Effect of hydrological conditions in the Scotia Sea on aggregations of baleen whales [1973, rus] **B-20584**

Laudon, T.S.
Stratigraphical studies in Orville Coast and eastern Ellsworth Land [1978, eng] **E-21502**

Laurent, G.
Mission to the Japanese antarctic station, Showa [1976, fre] **K-20350**

Lauscher, F.
Methods for a global climatology of hydrometeors: the percentage of solid precipitation [1976, ger] **I-20074**

Lavergnat, J.
F-lacuna events in Terre-Adelie and their relationship with the state of the ionosphere [1978, eng] **K-20629**
Wave measurements in the ARAKS experiment [1978, eng] **K-21412**

Lawrence, J.R.
Igneous and metamorphic processes associated with the formation of Chilean ophiolites and their implication for ocean floor metamorphism, seismic layering, and magnetism [1976, eng] **E-21330**

Laws, R.
[Press briefing] [1977, eng] **M-19583**

Laws, R.M.
British research in the Antarctic [1976, eng] **A-19495**
Discussion on scientific research in Antarctica [1977, eng] **A-20272**
Seals and whales of the Southern Ocean [1977, eng] **B-19475**

Lazarev, G.E.
Catalog of gravity stations in Antarctica (Explanatory notes and charts) [1973, eng] **L-21089**

Le Floch, J.
Antarctic Intermediate water in the intertropical Atlantic [1975, fre] **J-20197**

Le Touzé, V.
Study of the climate of the Kerguelen Islands and subantarctic region of the Indian Ocean. Climatology of Port-aux-Français [1977, fre] **I-19464**

Leal, J.
The army goes to the South Pole [1975, spa] **D-20259**

Leavitt, M.K.
Initial results from a tracking receiver direction finder for whistler mode signals [1978, eng] **K-20502**

Lebedev, V.L.
Maximum size of a wind-generated lead during sea freezing [1968, eng] **F-20234**

Leckie, R.M.
"Complete" seal carcass at Lake Miers, Miers Valley [1977, eng] **B-19599**

Leclaire, L.
Oceanographic activities in the French austral and antarctic territories [1976, fre] **D-20349**

Ledbetter, M.T.
Separation of primary ice-rafted debris from lag deposits, utilizing manganese micronodule accumulation rates in abyssal sediments of the Southern Ocean [1978, eng] **E-20798**
Reduction in the South Pacific zone of high bottom current activity during the last 3 million years [1978, eng] **J-21568**

Lee, J.S.
Observations of low-energy electrons from AE-C in the south polar cusp during the geomagnetic storm of September 21, 1977 [1978, eng] **K-21353**

Lee, K.E.
Oligochaeta from subantarctic islands [1968, eng] **B-19957**

Leech, O.J.
Islands in the wind [1977, eng] **B-20915**

Legeckis, R.
Survey of worldwide sea surface temperature fronts detected by environmental satellites [1978, eng] **J-20706**

Leinemann, M.
Experiments in making sausages from krill [1978, eng] **B-20526**
Preliminary investigation of the effect of green stomach content of krill on the quality of cooked krill paste [1977, ger] **B-20977**
Method for the analysis of tissue-juice retention in cooked krill paste [1977, ger] **G-20973**

LeMasurier, W.E.
Marie Byrd Land volcanology [1977, eng] **E-19656**
Volcanic history in Marie Byrd Land: implications with regard to Southern Hemisphere tectonic reconstructions [1976, eng] **E-20149**
Volcanoes in the Hobbs Coast and Ruppert Coast sectors of Marie Byrd Land [1978, eng] **E-21521**

Leonis, J.
Penguin hemoglobin *(Aptenodytes forsteri).* A 45 residue N-terminal sequence [1973, eng] **B-19394**
Leont'ev, E.B.
Ice conditions encountered by the d/e *Ob'* (1972/73) [1978, rus] **F-20736**
Results of navigability trials of antarctic ice by the *Ob'* [1978, rus] **G-20739**
Leont'ev, O.K.
Attempt at compiling a schematic map of exogenetic geomorphological factors acting on the World ocean bottom [1977, rus] **J-19742**
Leont'ev, S.V.
Effect of the Y component of the interplanetary magnetic field on the position of the polar cusps [1976, eng] **K-20691**
Leont'eva, V.V.
Pacific Ocean bottom water [1976, rus] **J-20229**
Lepel, E.A.
Enrichment of volatile elements in the atmosphere by volcanic activity: Augustine volcano 1976 [1978, eng] **I-21050**
LeResche, R.E.
Growth of Emperor penguin chicks at Cape Crozier, Ross Island, Antarctica [1972, eng] **B-21056**
Lessing, V.M.
Features of development of atmospheric processes in the southern hemisphere in 1974 [1977, rus] **I-19883**
Tropospheric jet streams in Antarctica [1978, rus] **I-21456**
Lettau, H.
Thermal response to albedo reduction on antarctic snow—modeling results [1977, eng] **F-19680**
Lettau, H.H.
Air temperature and two-dimensional wind profiles in the lowest 32 meters as a function of bulk stability [1977, eng] **I-20934**
Stability-related wind spiraling in the lowest 32 meters [1977, eng] **I-20935**
Climatonomical modeling of temperature response to dust contamination of antarctic snow surfaces [1977, eng] **I-21377**
Levenchuk, IU.A.
Phosphate content in Drake Passage water [1978, rus] **J-20641**
Leveratto, M.A.
Buchites in basalts in the Payún Matrú volcano and the Matienzo Base in the Argentine Antarctic [1966, spa] **E-20944**
Levi, S.
Limitations of ophiolite complexes as models for the magnetic layer of the oceanic lithosphere [1978, eng] **L-20624**
Levin, B.IU.
Under Antarctica's ice sheet—a meteorite crater [1978, rus] **E-20447**
Lewis, E.L.
Underwater sea ice formations [1977, eng] **F-20033**
Lewis, P.B., Jr.
Polarization studies of Siple-Roberval Pc 1 micropulsations [1977, eng] **K-19714**
Correlative Pc 1 micropulsations and particle precipitation [1978, eng] **K-21625**
Lewis Smith, R.I.
Classification of cryptogamic communities in the maritime Antarctic [1976, eng] **B-19547**
Influence of reindeer on the vegetation of South Georgia: 1. Long-term effects of unrestricted grazing and the establishment of exclosure experiments in various plant communities [1976, eng] **B-19560**
Liachov, S.B.
Photozavr modulation photometer [1978, eng] **K-21423**
Liakhov, S.B.
Low energy electron spectrometer *SERBE* [1978, eng] **K-21416**
Lieuvin, M.
Measurement of Be-10 in 1,000- and 5,000-year-old antarctic ice [1978, eng] **F-20980**
Light, J.J.
Unusual drainage system in an antarctic valley [1976, eng] **E-19551**
Limbert, D.W.S.
Annual summary tables of surface meteorological observations at British Antarctic Survey stations [1976, eng] **I-19556**
Climatological summary for 1971 [1976, eng] **I-19557**
Climatological summary for 1972 [1976, eng] **I-19558**
Lindsay, D.C.
Abnormal growth form of *Usnea antarctica* Du Rietz [1976, eng] **B-19564**
South Georgian microlichens: 2. A new species of *Microglaena* Körb. [1976, eng] **B-19566**
Two new lichens from Marion Island, southern Indian Ocean [1976, eng] **B-20096**
Lichens of Marion and Prince Edward Islands, southern Indian Ocean [1976, eng] **B-20097**
Lichens of cold deserts [1977, eng] **B-21177**
Role of lichens in antarctic ecosystems [1978, eng] **B-21228**
Lindsay, J.F.
Stratigraphy and sedimentation of the lower Beacon rocks of the Queen Alexandra, Queen Elizabeth, and Holland Ranges, Antarctica, with emphasis on Paleozoic glaciation [1968, eng] **E-19462**
Linick, T.W.
Tritium and carbon-14 distributions in seawater from under the Ross Ice Shelf Project ice hole [1979, eng] **J-21100**
Tritium and carbon-14 distributions in McMurdo Sound, 1977 [1978, eng] **J-21545**
Link, M.H.
New occurrences of dish structure in the stratigraphic record [1977, eng] **E-20015**
Linkletter, G.O.
Precipitation-forming mechanisms and the chemistry of precipitation on the Ross Ice Shelf, Antarctica [1977, eng] **F-20113**
Atmospheric processes and the chemistry of snow on the Ross Ice Shelf, Antarctica [1978, eng] **F-20393**
Role of precipitation processes in chemistry of polar snows [1976, eng] **F-21672**
Atmosphere's role in chemical composition of Ross Ice Shelf snow [1977, eng] **I-19697**
Lipenkov, V.IA.
Snow accumulation from 1970 to 1973 around Vostok Station [1978, rus] **F-20727**
Lipps, J.H.
Ross Ice Shelf Project—benthic biology, 1976-1977 [1977, eng] **B-19614**
Man's impact along the Antarctic Peninsula [1978, eng] **B-19986**
Predation on foraminifera by antarctic fish [1978, eng] **B-20536**
Life below the Ross Ice Shelf, Antarctica [1979, eng] **B-21101**
Benthic marine biology, Ross Ice Shelf Project [1978, eng] **B-21585**
Test ultrastructure of some calcareous foraminifera [1977, eng] **E-19419**
Miocene glaciomarine sediments from beneath the southern Ross Ice Shelf, Antarctica [1979, eng] **E-21095**
Miocene glaciomarine sediments from site J-9, Ross Ice Shelf, Antarctica [1978, eng] **E-21573**
Sediments and life under the Ross Ice Shelf (J-P), Antarctica [1978, eng] **E-21586**
East Base, Stonington Island, Antarctic Peninsula [1978, eng] **G-21648**
Lisney, S.J.W.
Dental problems in Antarctica [1976, eng] **H-19352**
Little, B.S.
Deep Freeze 1979 Cruise Report [1979, eng] **G-21488**
Littlefair, M.J.
Quartz-pyrite rocks of the South Shetland Islands, western Antarctic Peninsula [1978, eng] **E-21216**
Liubimova, T.G.
Prospects of the utilization of krill and other nonconventional resources of the world ocean [1973, eng] **A-20073**
Studying Southern Ocean biological resources [1978, rus] **B-21706**
Llambias, E.J.
Buchites in basalts in the Payún Matrú volcano and the Matienzo Base in the Argentine Antarctic [1966, spa] **E-20944**
Llano, G.A.
Polar research: a synthesis with special reference to biology [1978, eng] **B-20200**
Life in the deep south [1978, eng] **B-21080**
Ecology of the Southern Ocean region [1978, eng] **B-21472**
Loan, R.S.B.
Climatological summary for 1971 [1976, eng] **I-19557**
Climatological summary for 1972 [1976, eng] **I-19558**
Lobo, C.O.
Richard E. Byrd: admiral of the ends of the earth [1977, spa] **A-21292**
Lockyer, C.
Age at sexual maturity of the southern fin whale (Balaenoptera physalus) using annual layer counts in the ear plug [1972, eng] **B-20928**
Observations on diving behaviour of the sperm whale *Physeter catodon* [1977, eng] **B-21029**
Loewe, F.
Polar dry deserts [1974, eng] **I-20596**
Loftas, T.
In for the krill [1978, eng] **B-20525**

Lofthouse, P.
Cladocera, Ostracoda, and freshwater Copepoda [1967, eng] **B-19956**
Lohmann, G.P.
Abyssal benthonic foraminifera as hydrographic indicators in the western South Atlantic Ocean [1978, eng] **B-20538**
Loiseaux, J.M.
Measurement of Be-10 in 1,000- and 5,000-year-old antarctic ice [1978, eng] **F-20980**
Longton, R.E.
Classification of terrestrial vegetation near McMurdo Sound, continental Antarctica [1973, eng] **B-19396**
Loon, H. van
Climate of the upper air: Southern Hemisphere. Vol.3. Vector mean geostrophic winds: isogon and isotach analyses [1971, eng] **I-20140**
Description of the geostrophic wind in the southern hemisphere [1974, eng] **I-20597**
Loosli, H.H.
Extraction of gases and dissolved and particulate matter from ice in deep boreholes [1977, eng] **F-20123**
Lopatin, B.G.
Geology of Marie Byrd Land and Eights Coast [1976, rus] **E-19277**
Lorius, C.
Distribution of mean surface stable isotope values in East Antarctica: observed changes with depth in the coastal area [1977, eng] **F-20115**
Distribution of artificial tritium in firn samples from East Antarctica [1977, eng] **F-20116**
Accumulation of snow and radioactive debris in Antarctica: a possible refined radiochronology beyond reference levels [1977, eng] **F-20117**
Trace element content in East Antarctica snow samples [1977, eng] **F-20118**
Total gas content in polar ice: rheological and climatic implications [1977, eng] **F-20126**
Trace metals in antarctic snows since 1914 [1979, eng] **F-21255**
905-meter deep core drilling at dome C (East Antarctica) and related surface programs [1978, eng] **F-21532**
Losev, K.S.
Ice budget of Antarctica [1978, eng] **F-21340**
Loseva, I.A.
Ice budget of Antarctica [1978, eng] **F-21340**
Lovering, J.F.
Fission track geochronology of King Island, Bass Strait, Australia: relationship to continental rifting [1978, eng] **E-19870**
Mineralogical and petrographical studies of the Yamato meteorites, Yamato-7301(j), -7305(k), -7308(l) and -7303(m) from Antarctica [1978, eng] **E-19924**
Petrology of the Yamato meteorites (j), (k), (l), and (m) from Antarctica [1978, eng] **E-21125**
Lowry, J.
Exploring Macquarie Island. Part 2. Subantarctic refuge [1978, eng] **B-21374**
Lowry, J.K.
Comparison between the benthos of the Southern Ocean and the North Polar Ocean with special reference to the amphipoda and the polychaeta [1977, eng] **B-20042**
Lozinskaia, A.M.
Results of aerogravimetric studies in Antarctica [1975, rus] **L-20382**
Lucchitta, B.K.
Morphology of chasma walls, Mars [1978, eng] **E-20690**
Luders, D.J.
Behaviour of antarctic petrels and antarctic fulmars before laying [1977, eng] **B-19813**
Ludlum, D.M.
Around the world, pole to pole, in 48 hours [1977, eng] **I-20150**
Lugg, D.J.
Outlying islands of Macquarie Island [1978, eng] **E-20847**
Physiological adaptation and health of an expedition in Antarctica, with comment on behavioural adaptation [1977, eng] **H-19266**
Lugo, A.E.
Harvesting: ecological and energy considerations [1978, eng] **B-21081**
Lugovenko, V.N.
Ocean floor structure in the southern Atlantic Ocean [1978, rus] **E-20719**
Lukaschewsky, S.
Bacterial flora of antarctic krill *(Euphausia superba)* and some of their enzymatic properties [1978, eng] **B-20504**
Luk'ianova, T.S.
Applying statistics to the study of various factors affecting marine bottom fauna biomass distribution [1978, rus] **B-20444**
Lumb, J.T.
Paleomagnetism, K-Ar dating and tectonic interpretation of Upper Cretaceous and Cenozoic volcanic rocks of the Chatham Islands, New Zealand [1977, eng] **E-19805**
Lund, S.M.
Effect of prolonged isolation from environmental allergens on the clinical and laboratory manifestations of the allergic state [1977, eng] **H-19449**
Lutsenko, E.I.
Features of summer ice processes in the Pacific sector of Antarctica [1978, rus] **F-20648**
Features of atmospheric processes over the Drake Passage and nearby portions of the Southern Ocean, summer 1976 [1978, rus] **I-20642**
Lynch, D.K.
Atmospheric halos [1978, eng] **I-19941**
Lysakov, E.P.
Possible mechanism of meridional atmospheric circulation over Antarctica [1978, eng] **I-21613**
MacAyeal, D.R.
Glaciological measurements on the Ross Ice Shelf [1977, eng] **F-19687**
Glaciological measurements on the Ross Ice Shelf [1978, eng] **F-21537**
Macdonald, J.A.
Physiological adaptation in antarctic fishes [1978, eng] **B-20314**
MacDonald, W.R.
Antarctic cartography [1977, eng] **C-19675**
Machine design
Life found inside antarctic rocks [1978, eng] **B-21223**
Machowski, J.
Status of Antarctica in the light of international law [1977, eng] **M-19381**
Mackie, P.R.
Hydrocarbons in the marine environment. 2. Distribution of *n*-alkanes in the fauna and environment of the subantarctic island of South Georgia [1978, eng] **J-20598**
Mackinnon, D.I.
Late Cambrian Brachiopoda, Mollusca, and Trilobita from northern Victoria Land, Antarctica [1976, eng] **E-20142**
Mackintosh, N.A.
Biology of the populations of large whales [1972, eng] **B-20844**
Maclennan, C.G.
Magnetic fluctuations and ionosphere conductivity changes measured at Siple Station [1977, eng] **K-19715**
Association of ULF magnetic variations and changes in ionospheric conductivity during substorms [1978, eng] **K-20531**
On the relationship of 3mHz (Pc5) electric, magnetic, and particle variations [1978, eng] **K-20623**
Oscillations of the sun and the geomagnetic field [1978, eng] **K-20630**
High time resolution riometer studies of magnetospheric electron precipitation [1978, eng] **K-21623**
Macpherson, N.
Adaptation of groups to antarctic isolation [1977, eng] **H-19345**
Madden, J.M.
Taxonomy of antarctic bacteria from soils and air primarily of the McMurdo Station and Victoria Land dry valleys region [1978, eng] **B-20901**
Madsen, F.J.
Ophiuroidea [1967, eng] **B-19959**
Mae, S.
Bedrock topography deduced from multiple radar echoes observed in the Mizuho Plateau, East Antarctica [1978, eng] **E-20084**
Some information on topographic features and the characteristics of the ice sheet around the Yamato Mountains [1978, eng] **F-19921**
Possible causes of ice sheet thinning in the Mizuho Plateau [1978, eng] **F-20187**
Maenhaut, W.
Determination of the chemical composition of the South Pole aerosol by instrumental neutron activation analysis [1977, eng] **I-21054**
Maeno, N.
Structural characteristics of firn and ice cores drilled at Mizuho Station, East Antarctica [1978, eng] **F-21300**
Measurements of air permeability and elastic modulus of snow and firn drilled at Mizuho Station, East Antarctica [1978, eng] **F-21301**
Electrical behaviors of antarctic ice drilled at Mizuho Station, East Antarctica [1978, eng] **F-21302**
Compiled density data from cores drilled at Mizuho Station [1978, eng] **F-21308**
Magenc, C.
Optical observations systems for the ARAKS experiment [1978, eng] **K-21420**

Magnelli, D.D.
JATO rocket motor Mark 6, Mod 1, Antarctic test program [1978, eng] **G-21123**
Maĭstruk, P.N.
Effect of a new food product, krill paste, on chemical carcinogenesis [1976, rus] **B-20431**
Assimilation by the organism of aminoacids of the protein product paste "Ocean" [1974, rus] **H-20866**
Makarov, A.A.
Electromagnetic anomalies in the Mirnyy Observatory area [1977, rus] **L-21135**
Makarov, N.I.
Comparative characteristics of the main types of climatic clothing of Vostok Station personnel [1974, eng] **G-20522**
Makarov, O.E.
Technological and chemical characteristics and utilization of *Notothenia rossi marmorata* [1968, rus] **A-20812**
Makarov, R.R.
Distribution of the larvae and some questions of the ecology of reproduction of the Euphausiid *Euphausia frigida* Hasen, 1911 (Crustacea: Euphausiacea) in the southern part of the Scotia Sea [1978, eng] **B-20139**
Makhon'ko, K.P.
Assessment of nuclear blast product transfer from the southern hemisphere to the northern in relation to radioisotope concentration in the atmosphere [1977, rus] **I-20694**
Maksimov, S.I.
Preparing vitamin A from *Notothenia marmorata* liver by an improved method of alkaline hydrolysis [1972, rus] **A-20808**
Maksimova, M.P.
Biogenic elements of the troposphere and subtroposphere of the Indian Ocean [1973, rus] **J-19334**
Maksutov, D.D.
Unloading of an IL-14 aircraft onto a giant iceberg [1977, eng] **G-19409**
Malek, V.N.
Computation of water circulation of the Southern Ocean by the isopycnic model [1977, eng] **J-19789**
Malinin, V.N.
Relationship between the antarctic oceanic polar front and free-atmosphere processes [1978, rus] **I-20646**
Malmgren, B.A.
Biometric differentiation between Recent *Globigerina bulloides* and *Globigerina falconensis* in the southern Indian Ocean [1977, eng] **E-19418**
Test size variation in Globigerina bulloides in response to Quaternary paleoceanographic changes [1978, eng] **E-20631**
Planktonic foraminiferal dissolution at high latitudes of the southwestern Atlantic [1978, eng] **E-21565**
Late Quaternary paleoclimatic applications of mean-size variations in *Globigerina bulloides* d'Orbigny in the southern Indian Ocean [1978, eng] **E-21571**
Mal'tsev, V.N.
Geodetic work in Alasheyev Bight [1968, eng] **C-20341**
Hydrographic investigations of approaches to the Antarctic station Molodezhnaya [1968, eng] **J-20338**
Manabe, M.
Setting up a strain grid for measurement of glacier movement, Yamato Mountains, Antarctica, 1975-1976 [1977, eng] **F-19527**
Managadze, G.G.
Low energy electron spectrometer *SERBE* [1978, eng] **K-21416**
Photozavr modulation photometer [1978, eng] **K-21423**
Mandel, A.D.
Respiratory virus transmission at McMurdo Station: isolation of rhinoviruses from common colds during the winter fly-in period, 1976 [1977, eng] **H-19591**
Mann, B.
Story of Nukey Poo [1978, eng] **G-20945**
Mann, C.R.
Currents and water masses in the vicinity of Drake Passage [1977, eng] **J-20027**
Mann, E.K.
National security policy for the Antarctic [1974, eng] **M-20987**
Mansurov, S.M.
Catalog of polarity determinations for sectors of the interplanetary magnetic field from 1975 to 1976 [1978, rus] **K-21709**
Mansurova, L.G.
Catalog of polarity determinations for sectors of the interplanetary magnetic field from 1975 to 1976 [1978, rus] **K-21709**
Manzoni, M.
Report on the geology of the dry valley region, Transantarctic Mountains [1973, ita] **E-19877**
Paleomagnetism of Ordovician lamprophyres from Taylor Valley, Victoria Land, Antarctica [1977, eng] **L-20266**
Maral, G.
Investigations of auroral x-radiation in the Kerguelen-Arkhangel'skaya oblast magnetically conjugate regions [1970, eng] **K-20698**
Margalef, R.
Ecosystem diversity differences: poles and tropics [1977, eng] **B-20038**
Margolis, S.V.
Cenozoic and Late Mesozoic paleoceanographic and paleoglacial history recorded in circum-Antarctic deep-sea sediments [1977, eng] **J-19261**
Marine observer
British Antarctic Survey [1978, eng] **A-21260**
Marine Technology Society. Journal
Whale controversy: United States vs. Japan [1974, eng] **B-20132**
Importance of ocean upwelling [1974, eng] **J-19395**
Markarov, R.R.
Euphausia superba Dana (Crustacea:Euphausiacea) reproduction [1976, rus] **B-20395**
Markeev, A.K.
Radiospectrograph in the frequency range of 25 to 50 megahertz [1978, eng] **K-21424**
Markl, R.G.
Kerguelen Plateau bathymetry, sediment distribution and crustal structure [1977, eng] **E-19260**
Further evidence for the Early Cretaceous breakup of Gondwanaland off southwestern Australia [1978, eng] **E-19875**
Basement morphology and rift geometry near the former junction of India, Australia, and Antarctica [1978, eng] **L-20062**
Markov, V.I.
Sonar in *Eudyptes chrysolophus* [1977, rus] **B-19537**
Marmorato, M.A.
Core splitter for Argentine-U.S. coring program [1978, eng] **E-21640**
Marra, J.
Journal of the Resolution's voyage in 1771-1775 [1967, eng] **D-21181**
Martin, H.
Ross sea region in the Middle Miocene: a glimpse into the past [1979, eng] **E-21096**
Martin, P.
Aircraft logistics and drifting buoy coverage for the first GARP global experiment [1978, eng] **G-20417**
Martin, P.J.
Spatial distribution of 10 m temperatures in the Antarctic Peninsula [1978, eng] **I-20653**
Martin, W.
Antarctic meteorite Yamato 74123—a new ureilite [1978, eng] **E-20410**
Martynenko, V.P.
Assessment of nuclear blast product transfer from the southern hemisphere to the northern in relation to radioisotope concentration in the atmosphere [1977, rus] **I-20694**
Masaki, Y.
Japanese pelagic whaling and sighting in the Antarctic, 1974/75 [1976, eng] **B-20664**
Mashkovich, S.A.
Evaluation of the informational value of upper-air and satellite measurement systems [1977, rus] **I-20515**
Maslennikova, N.V.
Amino acid content of krill and krill meal [1970, rus] **B-20819**
Maslovskiĭ, M.I.
Wind drift of antarctic sea ice [1977, eng] **F-19788**
Seasonal variability of Antarctic sea ice extent: its numerical modeling [1977, eng] **F-20889**
Mason, A.S.
Atmospheric HT and HTO. 4. Estimation of atmospheric hydrogen residence time from interhemispheric tritium gas transport [1977, eng] **I-20499**
Antarctic tritium measurements [1978, eng] **I-21617**
Mason, T.K.
On the ice in Antarctica [1978, eng] **A-20917**
Masuda, A.
REE, Ba, Sr and Rb in the Yamato meteorites, with special reference to Yamato-691(a), -692(b) and -693(c) [1978, eng] **E-19933**
Mathieu, G.G.
Uranium in open ocean: concentration and isotopic composition [1977, eng] **J-19516**

Matile, L.
New apteran Sphaerocerid from the Crozet Islands [1975, fre] **B-20841**
Matsubaya, O.
Antarctic saline lakes—stable isotopic ratios, chemical compositions and evolution [1979, eng] **E-21126**
Matsuda, T.
Free-living prostigmatic mites found around Syowa Station, East Antarctica [1977, jap] **B-19305**
Changes in social life of wintering parties of Japanese Antarctic Research Expedition [1977, jap] **H-19304**
Matsumoto, G.
Activities of Japanese party in McMurdo Sound area 1976-77 [1977, eng] **A-19529**
Organic constituents of antarctic lake waters and sediments of the McMurdo Sound region [1978, eng] **E-20370**
Matsumoto, H.
Rocket observation of keV electron fluxes at Syowa Station [1978, eng] **K-20951**
Modified electron spectrometer for medium energy [1978, eng] **K-20952**
Matsumoto, M.
Navigation of *Soya* in the Antarctic Ocean [1978, jap] **G-19766**
Matsumoto, Y.
Collection of Yamato meteorites, East Antarctica in November and December 1975, and January 1976 [1978, eng] **E-19918**
Antarctic geological map series. Sheet 17—Northern Yamato Mountains (1) Mt. Fukushima [1978, eng] **E-20302**
Setting up a strain grid for measurement of glacier movement, Yamato Mountains, Antarctica, 1975-1976 [1977, eng] **F-19527**
Matsuo, T.
S-310JA-1 rocket observation of VLF emission spectra at Syowa Station in Antarctica [1978, eng] **K-20953**
Measurements of ionospheric electric fields with antarctic sounding rockets S-210JA-24 and 25 [1979, jap] **K-21681**
Measurements of electric field and auroral X-rays with antarctic balloons [1979, jap] **K-21682**
Mattaboni, P.J.
Microseismicity near the Indian Ocean triple junction [1977, eng] **L-19910**
Matthews, L.H.
Penguins, whalers, and sealers: a voyage of discovery [1977, eng] **B-20497**
Maturana C., R.
Antarctic fur seal, *Arctocephalus gazella* (Peters), in the Chilean Antarctic (Pinnipedia—Otariidae) [1977, spa] **B-20908**
Matusov, A.L.
Human life support in Antarctica [1978, rus] **G-20677**
Morbidity of participants in the 13th Soviet-Antarctic Expedition [1975, eng] **H-20985**
Human adaptation to unusual living conditions [1978, rus] **H-21031**
Social and health aspects of human adaptation in polar regions [1978, rus] **H-21033**
Morbidity among members of the 15th Soviet Antarctic Expedition [1977, rus] **H-21142**
Transmitting ECG's from Antarctica to Moscow by radio [1977, rus] **H-21146**
Morbidity in the wintering party [1978, rus] **H-21466**
Human adaptation and health in Antarctica [1978, rus] **H-21707**
Matveeva, E.T.
Isolated bursts of type Pc1b geomagnetic pulsations at high latitudes [1978, eng] **K-21242**
Mawatari, S.
Pedunculate ctenostome from the antarctic [1968, jap] **B-21277**
Maxwell, J.G.H.
Record of *Mytilus edulis* L. from South Georgia [1976, eng] **B-19563**
Maxworthy, T.
Topographic effects in rapidly-rotating fluids: flow over a transverse ridge [1977, eng] **J-20842**
May, R.M.
Whaling: past, present and future [1978, eng] **B-21173**
Ecological interactions in the Southern Ocean [1979, eng] **B-21225**
Mayeda, T.K.
Oxygen isotopes in several Yamato meteorites [1978, eng] **E-19931**
Mayewski, P.A.
Recent decline in available moisture in northern Victoria Land, Antarctica [1978, eng] **F-21339**
McCamy, K.
Research directed toward the use of long and intermediate period seismic waves for the identification of seismic sources [1974, eng] **L-21193**
Research directed toward the use of long and intermediate period seismic waves for the identification of seismic sources [1974, eng] **L-21194**
McCartney, M.S.
Water mass renewal in the subantarctic zone [1977, eng] **J-19628**
Subantarctic mode water [1977, eng] **J-21026**
McClain, E.P.
Eleven year chronicle of one of the world's most gigantic icebergs [1978, eng] **F-20881**
Use of infrared and visible imagery for sea ice monitoring [1978, eng] **F-21066**
McCleave, J.D.
Ecology of benthic fishes and echinoderms along the Scotia Arc and the Antarctic Peninsula [1977, eng] **B-19607**
McConnell, A.
Historical methods of temperature measurement in arctic and antarctic waters [1978, eng] **J-21150**
McCoy, F.W.
Zeolites in South Atlantic deep-sea sediments [1977, eng] **E-19848**
History of sediment lithofacies in the South Atlantic Ocean [1977, eng] **E-19852**
McGinnis, L.
Diamond drilling in environmentally sensitive areas—environmental impact: monitoring and assessment [1976, eng] **E-19463**
McGinnis, L.D.
Environmental appraisal for the Dry Valley Drilling Project phases III, IV, V (1973-74, 1974-75, 1975-76) [1978, eng] **B-19980**
Summary of environmental monitoring and impact assessment of the DVDP [1978, eng] **B-19982**
Logging summary of the Dry Valley Drilling Project [1977, eng] **E-19665**
Summary of field activities of the Dry Valley Drilling Project 1972-1973 and 1973-1974 [1978, eng] **E-19981**
Significance of gamma-ray, salinity and electrical logs in DVDP boreholes [1978, eng] **E-20371**
Polar groundwater—a thermo-saline system [1978, eng] **E-21092**
Dry Valley Drilling Project Seminar III, Tokyo [1978, eng] **E-21519**
Meteorological constraints on hydrology studies in the dry valleys, Antarctica [1976, eng] **I-21669**
McGowran, B.
Stratigraphic record of Early Tertiary oceanic and continental events in the Indian Ocean region [1978, eng] **E-19874**
McGregor, C.
Trace elements in the antarctic atmosphere [1978, eng] **I-21616**
McInnes, B.
Modelling surging glaciers and periodic surging of the Antarctic ice sheet [1978, eng] **F-21113**
McIntosh, W.C.
Volcanoes in the Hobbs Coast and Ruppert Coast sectors of Marie Byrd Land [1978, eng] **E-21521**
Volcanic activity at Mt. Erebus, 1977/78 [1978, eng] **E-21522**
McIntyre, T.J.
Report of the American guest aboard the whaling factoryship No.2 *Tonan Maru,* AW 30 1975/76 [1976, eng] **B-21016**
McKee, E.H.
Petrology and K-Ar age of volcanic tuff and ash from the Walvis Seamount province, DSDP Site 259, Leg 39 [1977, eng] **E-19850**
McKee, W.D.
Scattering of Rossby waves by partial barriers [1972, eng] **J-21205**
McKelvey, B.C.
Stratigraphy of the Taylor and lower Victoria groups (Beacon Supergroup) between the MacKay Glacier and Boomerang Range, Antarctica [1977, eng] **E-20175**
McLachlan, J.S.
Macquarie Island: a sub-Antarctic wonderland [1974, eng] **B-21084**
McNamara, T.M.
Comparison between two methods of assaying relative microbial activity in marine environments [1977, eng] **B-21185**
McSweeny, E.S.
Morphology and distribution of the antarctic cranchiid squid *Galiteuthis glacialis* (Chun) [1971, eng] **B-19249**
Systematics and morphology of the antarctic cranchiid squid *Galiteuthis glacialis* (Chun) [1978, eng] **B-21148**
McWhinnie, M.A.
Antarctic research [1974, eng] **A-20133**
Polar research: to the present, and the future [1978, eng] **A-20198**
Major international polar research problems [1978, eng] **A-20210**
Ross Ice Shelf Project environmental impact statement July, 1974 [1978, eng] **B-19979**

McWhinnie, M.A. *(cont.)*
Potential impact of harvesting zooplankton on the south circumpolar ecosystem [1978, eng] **B-19985**
Antarctic marine living resources with special reference to krill *Euphausia superba:* assessment of adequacy of present knowledge [1978, eng] **B-21492**
Biological studies of antarctic krill, austral summer, 1977-1978 [1978, eng] **B-21581**

Mead, K.L.
Bibliography of dry valley publications produced under the aegis of the New Zealand Antarctic Research Programme 1959-1976 [1977, eng] **A-19468**
Bibliography of N.Z.A.R.P. publications 1956-1976 [1978, eng] **A-20587**
Bibliography of international dry valley publications, 1907-1977 [1978, eng] **A-20588**

Meeth, K.
Northern records of the Antarctic Petrel *Thalassoica antarctica* in the South Pacific [1977, eng] **B-19747**

Meeth, P.
Northern records of the Antarctic Petrel *Thalassoica antarctica* in the South Pacific [1977, eng] **B-19747**

Meier, S.
From Greenland to Antarctica; in memory of Fritz Loewe [1975, ger] **A-19799**
Geodetic observation methods for surveying and monitoring Antarctic outflow glaciers [1975, ger] **C-19500**
Accuracy of trigonometric leveling above ice at stable stratification of temperature and refraction [1975, ger] **C-19504**
Antarctic icebergs [1976, ger] **F-19366**
Flow rate and ice discharge of the Hays, Campbell and Assender Glaciers, Enderby Land, Antarctica [1977, ger] **F-21156**

Meisner, E.E.
New species of *Chaenichthys* from the Southern Ocean [1974, rus] **B-20585**
New data on the distribution of antarctic fishes [1979, eng] **B-21399**

Mejia, R.H.
Extracellular water distribution and circulatory function of the penguin [1970, eng] **B-19746**

Melander, O.
Reconnaissance of the glacial geology of Hobbs Coast and Ruppert Coast, Marie Byrd Land [1978, eng] **E-21529**

Melanson, K.
Piston coring aboard USCGC *Glacier* in the Ross Sea [1978, eng] **E-21576**

Meldrum, D.T.
International studies of ice sheet and bedrock [1977, eng] **F-20279**
Radio echo sounding of the antarctic ice sheet, 1977-78 [1978, eng] **F-21533**
Antarctic airborne radio echo sounding, 1977-78 [1978, eng] **G-21152**

Mellor, M.
Some elements of iceberg technology [1978, eng] **F-20068**
Obtaining fresh water from icebergs [1977, rus] **F-20158**
Some elements of iceberg technology [1978, eng] **F-20454**
Controlled perimeter blasting in cold regions [1975, eng] **G-19487**

Mende, S.B.
Optical diagnostics of the August 1972 PCA event [1976, eng] **K-20509**

Men'shutina, I.N.
Possible classification of photometric records in the polar cap [1978, rus] **K-21689**
Behavior of the plasma layer during breakup according to Mirnyy Station data [1978, rus] **K-21690**

Mercer, J.H.
Radiocarbon dating of the last glaciation in Peru [1977, eng] **E-19374**
West Antarctic ice sheet and CO2 greenhouse effect: a threat of disaster [1978, eng] **F-19878**
Glacial development and temperature trends in the Antarctic and in South America [1978, eng] **I-21385**

Merle, J.
Antarctic Intermediate water in the intertropical Atlantic [1975, fre] **J-20197**

Merlivat, L.
Distribution of mean surface stable isotope values in East Antarctica: observed changes with depth in the coastal area [1977, eng] **F-20115**
Distribution of artificial tritium in firn samples from East Antarctica [1977, eng] **F-20116**

Metcalfe, A.P.
Plutonic rocks from the Ruppert Coast, West Antarctica [1978, eng] **E-21500**

Meyer, M.
Biogeography and metabolism of phytoplankton and zooplankton in the Ross Sea, Antarctica [1978, eng] **B-21580**

Meyerhoff, A.A.
Spreading history of the eastern Indian Ocean and India's northward flight from Antarctica and Australia: Discussion and reply [1978, eng] **E-20529**
Genesis of island arcs [1977, eng] **E-20602**

Meyerhoff, H.A.
Spreading history of the eastern Indian Ocean and India's northward flight from Antarctica and Australia: Discussion and reply [1978, eng] **E-20529**
Genesis of island arcs [1977, eng] **E-20602**

Mezhduvedomstvennyĭ komitet SSSR po mezhdunarodnomu gidrologicheskomu desiatiletiiu
World water balance and water resources of the earth [1978, eng] **E-20931**

Miagkov, S.M.
Principal findings of glaciological and geomorphological research in the McMurdo Sound region (Victoria Land) [1977, rus] **A-21140**
Geomorphological map of Antarctica (1:15,000,000) [1978, rus] **E-21704**
Margin of continuous glaciation of Western Antarctica in the Ross Sea during the last glaciation maximum [1977, rus] **F-20173**
Effect of antarctic glaciation on global climate [1978, rus] **F-20806**

Michel, R.L.
International Weddell Sea Oceanographic Expedition, 1976: tritium results [1977, eng] **J-19620**
Tritium distributions in Weddell Sea water masses [1978, eng] **J-21049**
Tritium and carbon-14 distributions in seawater from under the Ross Ice Shelf Project ice hole [1979, eng] **J-21100**
Tritium and carbon-14 distributions in McMurdo Sound, 1977 [1978, eng] **J-21545**

Middleton, J.H.
Tidal currents in the central Weddell Sea [1977, eng] **J-19809**
International Weddell Sea Oceanographic Expedition, 1978 [1978, eng] **J-21552**

Miesch, A.T.
Petrochemical model for the genesis of the volcanic rocks from Ross Island and vicinity, Antarctica [1978, eng] **E-20373**

Migulin, V.V.
Broad-band wave measurements in the ARAKS experiment [1978, eng] **K-21413**

Mikhailovskiĭ, IU.A.
Observations on krill in a zone of artificial illumination [1970, eng] **B-20385**

Mikhaĭlovskiĭ, V.N.
Spatial and temporal characteristics of quasi-biweekly fluctuations in tidal force at high latitudes [1977, rus] **J-20081**

Mikirova, N.A.
Characteristics of proton distribution in the polar caps during the September 7, 1973 intrusion [1976, rus] **K-19496**

Milashenko, G.P.
Investigating the connection between the pressure field aloft and ground-level meteorological conditions in Antarctica [1977, rus] **I-21139**

Miles, J.A.R.
Respiratory virus infection late in isolation at the South Pole [1978, eng] **H-21607**

Milinevskiĭ, G.P.
Television system for observation of artificial aurorae in the conjugate region during the ARAKS experiment [1978, eng] **K-21421**

Millard, N.A.H.
Hydroids from the Kerguelen and Crozet shelves, collected by the cruise MD-03 of the *Marion Dufresne* [1977, eng] **B-19364**

Miller, C.G.
Hydrodynamics of icebergs in transit [1978, eng] **F-20467**

Miller, K.J.
Design and operation of the ice core data bank [1976, eng] **F-20604**

Miller, W., III
Structure of the Middle Miocene antarctic diatom species *Denticula antarctica* McCollum [1978, eng] **E-21569**

Milne, A.R.
Underwater sea ice formations [1977, eng] **F-20033**

Minshew, V.H., Jr.
Geology of the Scott Glacier and Wisconsin Range areas, central Transantarctic Mountains, Antarctica [1967, eng] **E-19398**

Minster, J.B.
Present-day plate motions [1978, eng] **E-21051**

Mironov, A.N.
Deep-sea urchins of the northern Pacific Ocean [1976, rus] **B-20231**
Mirovoĭ tsentr dannykh MGG B
Catalogue of data and publications on the Arctic and Antarctic; Vols. 1, 3-6 [1976, rus] **A-19881**
Mishima, M.
Distribution of trace elements around Showa Station. 2. Trace metals distribution in Langhovde [1977, jap] **E-19294**
Mitamura, T.
Inactivation of enzymes and chemical change in antarctic krill as a result of boiling [1976, jap] **B-19447**
On the antarctic krill protein concentrate (KPC). 1. Manufacture of the KPC by isopropyl alcohol method and its chemical composition [1977, jap] **B-19511**
Mitchell, B.
Antarctic riches—for whom [1977, eng] **A-19438**
Attention on Antarctica [1977, eng] **A-19439**
Antarctic enlightenment [1977, eng] **A-19440**
Miura, A.
Shear instability: auroral arc deformation and anomalous momentum transport [1978, eng] **K-20063**
Miwa, T.
Distribution of anaerobic bacteria isolated from the area around Syowa Station [1977, jap] **B-19302**
Miyajima, M.H.
Subantarctic region, southeast Indian Ocean: absolute chronology of upper Pleistocene calcareous nannofossil zones and paleoclimatic history determined from silicoflagellate, coccolith, and carbonate analysis [1975, eng] **E-19281**
Miyamoto, K.
Documents retrieval system at National Institute of Polar Research [1978, eng] **A-20089**
Construction of polar data-base system [1978, jap] **A-20830**
Miyamoto, M.
Classification for the Yamato-74 chondrites based on the chemical compositions of their olivines and pyroxenes [1978, eng] **E-19923**
Preliminary mineralogical examination of the Yamato-74 achondrites [1978, eng] **E-19927**
Yamato achondrite polymict breccias [1978, eng] **E-19928**
Inverted pigeonites from lunar breccia 76255 and pyroxene-crystallization trends in lunar and achondritic crusts [1977, eng] **E-20066**
Characterization of crust formation on a parent body of achondrites and the moon by pyroxene crystallography and chemistry [1976, eng] **E-20228**
Miyashita, M.
Body burdens of cesium-137 and potassium-40 in 21 members of the wintering party of the 16th JARE [1977, jap] **H-19301**
Miyazaki, S.
Rocket measurements of daytime electron density and temperature profiles in the polar ionosphere [1978, eng] **K-20948**
Mizera, P.F.
Satellite observations of polar, magnetotail lobe, and interplanetary electrons at low energies [1978, eng] **K-19912**
Mizoue, M.
Modes of gravity anomaly distributions in relation to the crustal structure of the antarctic continent [1978, eng] **L-20085**
Moar, N.T.
Goats on Auckland Islands [1978, eng] **B-20903**
Moell, M.
Geochemical and isotope studies, Ross Ice Shelf Project [1977, eng] **F-19688**
Mohr, H.
Behavior of krill *(Euphausia superba* Dana) [1978, ger] **B-21450**
Moiseev, B.I.
Artificial borehole deflection in Antarctica [1977, rus] **F-19884**
Moiseev, P.A.
Biological resources of the world ocean and the prospects for their use [1978, eng] **B-20511**
Some ways of increasing the world ocean bioproductivity [1977, eng] **B-20512**
Moiseeva, G.P.
Rate of ice melting in water [1978, rus] **F-21390**
Molinelli, E.
Large-scale relative dynamic topography of the Southern Ocean [1978, eng] **J-20533**
Climatic characteristics of the Antarctic Polar Front Zone [1978, eng] **J-20707**
Isohaline thermoclines in the southeast Pacific Ocean [1978, eng] **J-21131**
Möller, H.
On the occurrence of the parasitic copepod *Eubrachiella antarctica* on some antarctic fish [1977, eng] **B-20558**
Molnár, G.
Method for determining temperature profiles from satellite radiation data [1977, hun] **I-19492**
Monier, C.
Penguin hemoglobin *(Aptenodytes forsteri).* A 45 residue N-terminal sequence [1973, eng] **B-19394**
Monteath, C.
Weddell seal population dynamics Scott Base to Cape Royds [1978, eng] **B-20316**
Summary of the annual Adelie penguin census at Cape Royds [1978, eng] **B-20317**
Waste not left behind at Scott Base [1977, eng] **G-19359**
Moore, D.M.
Pseudo-vivipary in Fuegian and Falkland Islands grasses [1976, eng] **B-19553**
Moore, R.G.
Polar Star—the second time around [1978, eng] **G-20856**
Moore, T.C., Jr.
Cenozoic hiatuses in pelagic sediments [1978, eng] **J-21020**
Moreau, J.M.
Attitude measurement with Hall-effect magnetometers [1978, eng] **K-21419**
Morel, P.
Tentative paleocontinental maps for the Early Phanerozoic and Proterozoic [1978, eng] **L-20688**
Moreland, G.
Eleven new meteorites from Antarctica, 1976-1977 [1978, eng] **E-21124**
Moreno, C.A.
Distribution and spatial segregation of fish populations in South Bay, Doumer Island, Antarctic [1977, spa] **B-20911**
Feeding habits of the blue-eyed shag, *Phalacrocorax atriceps bransfieldensis* (Murphy) on Green Island, Antarctica [1976, spa] **B-21012**
Moreno Roa, H.
Upper Cenozoic volcanism in the Andes of southern Chile (from 40 deg 00 min to 41 deg 30 min S.L.) [1976, eng] **E-20145**
Morev, V.A.
Drilling through shelf ice near Novolazarevskaya Station [1978, rus] **F-20724**
Morgan, V.I.
Isotopes, climate and ice sheet dynamics from core studies on Law Dome, Antarctica [1977, eng] **F-20124**
Distribution, movement and melt rates of antarctic icebergs [1978, eng] **F-20462**
Morgan, W.J.
Rodriguez, Darwin, Amsterdam, ... a second type of hotspot island [1978, eng] **L-21052**
Mori, H.
Rocket measurements of daytime electron density and temperature profiles in the polar ionosphere [1978, eng] **K-20948**
Moriarty, K.C.
Clay minerals in southeast Indian Ocean sediments, transport mechanisms and depositional environments [1977, eng] **E-19262**
Morita, M.
Measurements of ionospheric electric fields with antarctic sounding rockets S-210JA-24 and 25 [1979, jap] **K-21681**
Morita, R.Y.
Starvation-induced barotolerance as a survival mechanism of a psychrophilic marine vibrio in the waters of the Antarctic Convergence [1978, eng] **B-20978**
Morphological characterization of small cells resulting from nutrient starvation of a psychrophilic marine vibrio [1976, eng] **B-20992**
Survival of a psychrophilic marine vibrio under long-term nutrient starvation [1977, eng] **B-20993**
Microbial life at low temperatures: ecological aspects [1978, eng] **B-21169**
Comparison between two methods of assaying relative microbial activity in marine environments [1977, eng] **B-21185**
Salinity and nutrient effects on the induction of the galactose permease system in a psychrophilic marine *Vibrio* [1978, eng] **B-21434**
Morita, Y.
Abortive attempt at wintering [1978, jap] **A-20434**
Meteorological phenomena in Antarctica [1963, jap] **I-19444**
Morley, B.M.
Lidar and replication studies of ice crystal precipitation at the South Pole [1977, eng] **I-19701**

Morner, N.-A.
Low sea levels, droughts and mammalian extinctions [1978, eng] **J-19942**
Morozov, A.I.
Caesium plasma source for the ARAKS experiment [1978, eng] **K-21411**
Morris, W.A.
What happened to the high-latitude palaeomagnetic poles [1978, eng] **L-20286**
Morse, J.W.
Dissolution kinetics of calcium carbonate in sea water: VI. The near-equilibrium dissolution kinetics of calcium carbonate-rich deep sea sediments [1978, eng] **J-20065**
Mosaic
New South Pole station [1974, eng] **G-20577**
Moshkin, M.P.
Assessment of the possibility of satisfying the information requirement at an antarctic station [1977, rus] **H-19891**
Circadian rhythm in human blood circulation in Antarctica [1978, rus] **H-21039**
Reaction of human thermoregulatory system to local chilling at different periods of the antarctic winter [1978, rus] **H-21457**
Moskowitz, B.
Limitations of ophiolite complexes as models for the magnetic layer of the oceanic lithosphere [1978, eng] **L-20624**
Moss, G.E.
Provisional cotidal charts for the southern Ross Sea [1977, eng] **J-19623**
Mougin, J.L.
Craniometric data on wild rabbits and feral cats of Hog Island, Crozet Archipelago [1976, fre] **B-19506**
Bird ringing in the Crozet Archipelago, Kerguelen, New Amsterdam and St. Paul Islands [1976, eng] **B-20777**
Continuous recording of internal temperatures of some *Spheniscidae* 1. The Gentoo penguin *Pygoscelis papua* of Possession Island (Crozet archipelago) [1972, fre] **B-20896**
Bird ringing in the Crozet Archipelago, Kerguelen, New Amsterdam and St. Paul Islands [1976, eng] **B-21372**
Mouzo, F.H.
Core splitter for Argentine-U.S. coring program [1978, eng] **E-21640**
Moyano G., H.I.
Bryozoan epizoa of *Laetmonice producta* Grube (Annelida, Polychaeta) [1972, spa] **B-19792**
Romancheina asymmetrica sp. nov., a new species for Antarctica and a key to antarctic and magellanic species of Exochellidae (Bryozoa, Cheilostomata) [1975, spa] **B-19846**
Mozer, F.S.
Direct evidence of solar flare modification of stratospheric electric fields [1979, eng] **K-21133**
Mozhaev, A.M.
Phenomenon of sporadic E-layer conjugation [1976, eng] **K-21008**
Mrochkov, K.A.
Chemical composition of body parts of the antarctic sperm whale [1972, rus] **B-20809**
Muchmore, H.G.
Respiratory virus infection late in isolation at the South Pole [1978, eng] **H-21607**
Mudrey, M.G.
Correlation of clinopyroxene composition with environment of formation based on data from Ross Island volcanic rocks [1978, eng] **E-20375**
Mudrey, M.G., Jr.
Environmental appraisal for the Dry Valley Drilling Project phases III, IV, V (1973-74, 1974-75, 1975-76) [1978, eng] **B-19980**
Diamond drilling in environmentally sensitive areas—environmental impact: monitoring and assessment [1976, eng] **E-19463**
Summary of field activities of the Dry Valley Drilling Project 1972-1973 and 1973-1974 [1978, eng] **E-19981**
Müller-Schwarze, D.
Behavioral and ecological adaptations in pygoscelid penguins [1977, eng] **B-19600**
Man's impact on antarctic birds [1978, eng] **B-19987**
Behavioral and ecological adaptations in pygoscelid penguins [1978, eng] **B-21591**
Breeding status of southern elephant seals at King George Island [1978, eng] **B-21597**
Muncy, H.L.
Volcanic geology of the lower slopes of Mt. Morning [1978, eng] **E-21523**
Murakami, Y.
Studies of the radium, uranium and thorium concentrations in DVDP cores of Wright Valley [1978, eng] **E-20366**
Murakoshi, N.
Projects of the 15th JARE wintering team [1976, jap] **A-19430**
Meteorological phenomena in Antarctica [1963, jap] **I-19444**
Murata, S.
View of the formation of saline waters in the dry valleys [1978, eng] **F-20374**
Precipitating electrons observed on board the Japanese antarctic sounding rockets S-310JA-1 and S-310JA-2 [1978, eng] **K-20950**
Observation of precipitating electrons on board the S-310JA-2 [1979, jap] **K-21675**
Murayama, M.
Reopening of Showa Station [1978, jap] **G-19769**
Murozumi, M.
Mercury profile of Mizuho ice sheet, Antarctica [1977, jap] **F-19293**
Chemical constituents in the surface snow in Mizuho Plateau [1978, eng] **F-19839**
Compiled data of chemical compositions in ice cores drilled at Mizuho Station [1978, eng] **F-21311**
Murphy, G.
Small scale modeling of iceberg transport [1978, eng] **F-20464**
Murphy, R.L.
Contractor support [1977, eng] **G-19730**
Murua, R.
Ecological studies in Robert Island (South Shetland) 7. Birds of Robert Island Peninsula [1972, spa] **B-19793**
Musso, J.C.
Uruguay in the "Antarctic club" [1976, spa] **A-20194**
Muto, A.
Living conditions during the antarctic winter [1973, jap] **G-19442**
Myznikova, M.N.
Features of the oceanographic regime in Prydz Bay (Feb. 1973) [1978, rus] **J-20740**
Nagai, M.
Preface [1976, jap] **A-19431**
Nagai, T.
Annual variation of the geomagnetic field in polar regions [1979, jap] **K-21684**
Nagao, K.
Rare gas studies of Yamato-7301(j), -7304(m) and -7305(k) [1978, eng] **E-19929**
Nagata, T.
Proposal for first JARE and the unsuccessful second wintering [1978, jap] **A-19763**
Japanese scientific activities in the McMurdo region, 1976-1977 [1977, eng] **E-19653**
Proceedings of the second Symposium on Yamato Meteorites [1978, eng] **E-19916**
Possible mechanism of concentration of meteorites within the meteorite ice field in Antarctica [1978, eng] **E-19920**
Supplementary notes on the magnetic classification of stony meteorites [1978, eng] **E-19934**
Magnetic properties of an iron meteorite (Yamato-75031) and a pallasite (Yamato-74044) [1978, eng] **E-19935**
Metallographic properties of Yamato iron meteorite, Yamato-75031, and stony-iron meteorite, Yamato-74044 [1978, eng] **E-19936**
Note on new antarctic iron meteorites [1978, eng] **E-19937**
Japanese scientific activities in Victoria Land 1977-1978 [1978, eng] **E-21507**
Theoretical steady state profile of ice sheets (two-dimensional model) [1977, eng] **F-19521**
Proceedings of the Second Symposium on Rocket Experiments in Antarctica [1978, eng] **K-20947**
Nakajima, G.
Convenient assay method for protease of the antarctic krill using paper disks [1978, jap] **B-20943**
Nakamura, J.
Food supply problems of an early JARE [1978, jap] **G-20432**
Nakamura, S.
Chemical constituents in the surface snow in Mizuho Plateau [1978, eng] **F-19839**
Compiled data of chemical compositions in ice cores drilled at Mizuho Station [1978, eng] **F-21311**
Nakamura, T.
Internal friction of antarctic Mizuho ice cores at low frequency [1978, eng] **F-21304**

Nakanishi, S.
Ecological studies of the moss and lichen communities in the ice-free areas near Syowa Station, Antarctica [1977, jap] **B-19298**
Nakawo, M.
Discharge of ice across the Sôya Coast [1978, eng] **F-19837**
Structural characteristics of firn and ice cores drilled at Mizuho Station, East Antarctica [1978, eng] **F-21300**
Naletova, I.A.
Amino acids dissolved in sea water as one of the indicators of the physiologic state of an ecosystem [1978, eng] **J-20932**
Nanni, T.
Paleomagnetism of Ordovician lamprophyres from Taylor Valley, Victoria Land, Antarctica [1977, eng] **L-20266**
Narita, H.
Controlling factors of drifting snow [1978, eng] **F-19827**
Study of formation of a surface snow layer [1978, eng] **F-19832**
Structural characteristics of firn and ice cores drilled at Mizuho Station, East Antarctica [1978, eng] **F-21300**
Measurements of air permeability and elastic modulus of snow and firn drilled at Mizuho Station, East Antarctica [1978, eng] **F-21301**
Compiled stratigraphic data from cores drilled at Mizuho Station [1978, eng] **F-21307**
Compiled density data from cores drilled at Mizuho Station [1978, eng] **F-21308**
Petrographic data from cores drilled at Mizuho Station [1978, eng] **F-21309**
Inclination of the hole drilled by JARE-13 [1978, eng] **F-21313**
Naruse, R.
Morphological feature of the ice sheet in Mizuho Plateau [1978, eng] **F-19821**
Surface flow and strain of the ice sheet measured by a triangulation chain in Mizuho Plateau [1978, eng] **F-19835**
Flow line of the ice sheet over Mizuho Plateau [1978, eng] **F-19836**
Possible causes of ice sheet thinning in the Mizuho Plateau [1978, eng] **F-20187**
Distribution of three geomagnetic components over Mizuho Plateau, Antarctica [1977, eng] **L-19523**
Gravity anomalies and bedrock relief in Mizuho Plateau [1978, eng] **L-19823**
National Research Council. Polar Research Board
Earth science investigations in the United States Antarctic Research Program (USARP) for the period July 1, 1977 - June 30, 1978 [1978, eng] **E-20561**
Naumov, A.G.
Prospects of the utilization of krill and other nonconventional resources of the world ocean [1973, eng] **A-20073**
Energetics of the Falkland sprat *Sprattus fuegensis* Jenyns [1977, rus] **B-21438**
Navato, A.R.
Long-term global sea surface temperature fluctuations and their possible influence on atmospheric CO2 concentrations [1978, eng] **J-21480**
Nazintsev, IU.L.
Salt and phase composition of pack ice during growth and destruction [1978, rus] **F-20723**
Neff, W.D.
Acoustic sounder operations at South Pole Station [1977, eng] **I-19702**
Boundary layer research at South Pole Station using acoustic remote sensing [1978, eng] **I-21612**
Neider, C.
Gathering materials for a second book about Antarctica [1978, eng] **A-21647**
Neilson, D.
Ecological and behavioral adaptations to antarctic environments [1977, eng] **B-19605**
Neilson, D.R.
Impact of unfavorable ice conditions on bird productivity at Palmer Station during the 1977-78 field season [1978, eng] **B-21589**
Nelson, E.
Structural observations in the Darwin Mountains, Antarctica and Tierra del Fuego: 77-4 Cruise of the r/v *Hero* [1977, spa] **E-21335**
Nelson, J.S.
Fishes of the Southern Hemisphere genus *Neophrynichthys* (Scorpaeniformes: Cottoidea), with descriptions of two new species from New Zealand and Macquarie Island [1977, eng] **B-19815**
Nelson, W.H.
Geological studies of the Dufek intrusion, Pensacola Mountains, 1976-1977 [1977, eng] **E-19650**
Geology of the Saratoga Table quadrangle, Pensacola Mountains, Antarctica [1978, eng] **E-21257**
Geophysical studies of the Dufek intrusion, Pensacola Mountains, Antarctica, 1976-1977 [1977, eng] **L-19651**
Nemoto, T.
Cocconeis diatom on the skin of Franciscana [1977, eng] **B-20094**
Nerubenko, S.G.
Spatial and temporal characteristics of quasi-biweekly fluctuations in tidal force at high latitudes [1977, rus] **J-20081**
Neshyba, S.
On melting icebergs [1978, eng] **F-21061**
Nesmianovich, A.T.
Television system for observation of artificial aurorae in the conjugate region during the ARAKS experiment [1978, eng] **K-21421**
Neuberg, H.A.C.
Ocean wave measurements at the RISP J-9 camp [1978, eng] **J-21557**
Neuburg, H.A.C.
Provisional cotidal charts for the southern Ross Sea [1977, eng] **J-19623**
Spatial variation of the K1, O1, and M2 constituents of the southern Ross Sea tide [1978, eng] **J-21556**
New Zealand Antarctic Society
Antarctic, Vol.8, No.1 [1977, eng] **A-19356**
Antarctic, Vol.8, No.2 [1977, eng] **A-19357**
Antarctic, Vol.8, No.3 [1977, eng] **A-19358**
Antarctic, Vol.8, No.4 [1977, eng] **A-19437**
New Zealand. Department of Scientific and Industrial Research
DSIR research 1975 [1975, eng] **A-19494**
DSIR research 1977 [1977, eng] **A-20103**
New Zealand. Department of Scientific and Industrial Research. Antarctic Division
Bibliography of dry valley publications produced under the aegis of the New Zealand Antarctic Research Programme 1959-1976 [1977, eng] **A-19468**
New Zealand antarctic research programme 1977-78 [1977, eng] **A-20104**
Bibliography of N.Z.A.R.P. publications 1956-1976 [1978, eng] **A-20587**
Bibliography of international dry valley publications, 1907-1977 [1978, eng] **A-20588**
New Zealand antarctic research programme 1978-1979 and report of 1977-78 programme [1978, eng] **A-20717**
Antarctic operations manual [1978, eng] **G-20778**
Antarctic field manual [1978, eng] **G-20779**
Antarctic first aid manual [1978, eng] **H-20780**
New Zealand surveyor
Surveyors in Antarctica [1963, eng] **A-19280**
Summary of a survey report by P.M. Otway, surveyor with the southern party, N.Z. Geological and Survey Expedition, 1961/62 [1963, eng] **C-19279**
Newell, R.E.
Pilot study of concomitant changes in total ozone and atmospheric general circulation [1978, eng] **I-21004**
Long-term global sea surface temperature fluctuations and their possible influence on atmospheric CO2 concentrations [1978, eng] **J-21480**
Ney, R.
Wave measurements in the ARAKS experiment [1978, eng] **K-21412**
Nezhenkin, V.I.
Investigating the connection between the pressure field aloft and ground-level meteorological conditions in Antarctica [1977, rus] **I-21139**
Niblett, E.R.
On the quiet-time Pc5 pulsations events (spacequakes) [1979, eng] **K-21380**
Nikiforov, L.G.
Climatic zonality of types of seacoasts [1977, rus] **E-19286**
Nikitina, I.S.
Antarctic gravity anomaly map [1978, rus] **C-21702**
Nikolaev, IU.V.
Relationship between the antarctic oceanic polar front and free-atmosphere processes [1978, rus] **I-20646**
Nikonorov, I.V.
Principles and methods of whaling regulation [Pt.1] [1977, rus] **A-21712**
Nilsen, T.H.
New occurrences of dish structure in the stratigraphic record [1977, eng] **E-20015**
Nisbet, J.S.
Coupling of mid-latitude spread-F between conjugate stations [1977, eng] **K-20430**
Nishibori, E.
First wintering party of the JARE [1978, jap] **D-19768**

Nishiizumi, K.
Cosmic-ray-produced Mn-53 in thirty-one meteorites [1978, eng] **E-21129**
Nishino, M.
Observing plan of wave normal direction of auroral VLF emissions on board a rocket at Syowa Station [1978, eng] **K-20955**
Nishio, F.
Glaciological survey in 1976-1977 [1978, eng] **F-20077**
Meteorological data at Mizuho Camp, Antarctica in 1976-1977 [1977, eng] **I-19360**
Atmospheric water vapor measurements at Mizuho Camp, East Antarctica in 1976-1977 [1978, eng] **I-20082**
Nishiyama, N.
Riometer records of 30 MHz cosmic noise at Syowa Station, Antarctica in 1977 [1978, eng] **K-20998**
Nishizumi, K.
Cosmic ray induced Mn-53 in Yamato-7301(j), -7305(k) and -7304(m) meteorites [1978, eng] **E-19930**
Nitsan, U.
Investigation of creep instability as a mechanism for glacier surges [1978, eng] **F-21203**
Nittinger, J.
Utilization of krill shells in feeding experiments with rats [1978, ger] **B-20560**
Noonan, A.
Eleven new meteorites from Antarctica, 1976-1977 [1978, eng] **E-21124**
Norton, I.O.
Tectonic structure and petrology of the antarctic plate boundary near the Bouvet triple junction [1978, eng] **E-19869**
Heat flow in the Weddell Sea [1978, eng] **J-21572**
Norwegian Academy of Science and Letters. Norwegian National Committee on Polar Research
Report to SCAR on Norway's antarctic research activities October 1977-September 1978; Norway's antarctic research activities planned for October 1978-September 1979 [1978, eng] **A-20562**
Novitsky, J.A.
Starvation-induced barotolerance as a survival mechanism of a psychrophilic marine vibrio in the waters of the Antarctic Convergence [1978, eng] **B-20978**
Morphological characterization of small cells resulting from nutrient starvation of a psychrophilic marine vibrio [1976, eng] **B-20992**
Survival of a psychrophilic marine vibrio under long-term nutrient starvation [1977, eng] **B-20993**
Nowlin, W.D., Jr.
Structure and transport of the Antarctic Circumpolar Current at Drake Passage from short-term measurements [1977, eng] **J-19318**
Oceanographic station data collected aboard R/V *Melville* during FDRAKE 75 [1977, eng] **J-20078**
Oceanographic data collected aboard R/V *T.G. Thompson* during FDRAKE 76, Legs I and II [1978, eng] **J-20413**
Oceanographic data collected aboard R/V *Melville* during January-February 1977 as a part of FDRAKE 77 [1978, eng] **J-21379**
FDRAKE 77 *Yelcho* [1978, eng] **J-21549**
Noxon, J.F.
Stratospheric NO2 in the antarctic winter [1978, eng] **I-21171**
Nozdrachev, S.I.
On the biological value of krill paste [1971, rus] **B-19410**
Nullo, F.
Taquetren Formation in the Chubut River valley, its stratigraphic relationships within Patagonia, and similarities with Mount Flora, Antarctica [1975, spa] **E-19860**
NUS Corporation, Rockville, Md.
Icebreaker propulsion systems feasibility study. Vol.7. Mission sensitivity analyses [1967, eng] **G-21201**
Nutt, C.J.
Geological studies of the Dufek intrusion, Pensacola Mountains, 1976-1977 [1977, eng] **E-19650**
Oba, Y.
Petrological studies of Yamato-74 meteorites (2) [1978, eng] **E-19926**
Oborina, S.F.
Results of seismic observations of dynamic glacier processes at Mirnyy [1978, rus] **F-20772**
O'Connor, E.F.
Observations on submerged glacial ice in McMurdo Sound, Antarctica [1978, eng] **F-20392**
Oda, T.
Circadian rhythm in Antarctica [1975, jap] **H-20049**
Oeklk, H.
Natural or human influences on population changes of Adelie penguins *(Pygoscelis adeliae)* in the Ross Sea sector of Antarctica [1978, ger] **B-20406**
Oerlemans, J.
Energy balance climate models: stability experiments with a refined albedo and updated coefficients for infrared emission [1978, eng] **I-19990**
Oeschger, H.
Extraction of gases and dissolved and particulate matter from ice in deep boreholes [1977, eng] **F-20123**
Summary of work by the Physics Institute, Bern, on alpine and polar ice [1977, eng] **F-20131**
Ar-39 dating of groundwater [1974, eng] **F-20603**
Ogawa, T.
Rocket measurements of daytime electron density and temperature profiles in the polar ionosphere [1978, eng] **K-20948**
Measurements of ionospheric electric fields with antarctic sounding rockets S-210JA-24 and 25 [1979, jap] **K-21681**
Measurements of electric field and auroral X-rays with antarctic balloons [1979, jap] **K-21682**
Ohata, T.
Accumulation and ablation at Syowa Station [1978, eng] **F-19830**
Ohniwa, Y.
Oceanographic data of the 17th Japanese Antarctic Research Expedition 1975-1976 [1977, eng] **J-19528**
Ohsumi, S.
Attempt to standardize fishing efforts as applied to the stock assessment of the minke whale in the Antarctic Area IV [1976, eng] **B-20154**
Conversion of sustainable yield curve by numbers into that by weight in the fin and sperm whale populations [1976, eng] **B-20659**
Ohta, Y.
Geological research in the Ellsworth Mountains: Norwegian Expedition 1974-75 [1976, jap] **E-19425**
Ohtake, T.
Ice crystals in the Antarctic atmosphere [1976, eng] **F-20307**
Atmospheric ice crystals at the South Pole in summer [1978, eng] **I-21609**
Ohyama, Y.
Report of an ANARE observer [1976, jap] **A-19429**
Free-living prostigmatic mites found around Syowa Station, East Antarctica [1977, jap] **B-19305**
Population density of free-living mites in the ice-free areas around Showa Station, East Antarctica [1977, eng] **B-19524**
Okada, A.
Mineralogical and petrographical studies of the Yamato meteorites, Yamato-7301(j), -7305(k), -7308(l) and -7303(m) from Antarctica [1978, eng] **E-19924**
Petrology of the Yamato meteorites (j), (k), (l), and (m) from Antarctica [1978, eng] **E-21125**
Okal, E.A.
Seismicity and tectonics of the Ninetyeast Ridge area: evidence for internal deformation of the Indian plate [1978, eng] **L-20861**
Okano, J.
K-Ar age of Yamato meteorite, Yamato-74190-01(L) [1978, eng] **E-19932**
Okano, K.
Role of JARE headquarters [1978, jap] **A-19764**
Okuhira, F.
Distribution of accumulation measured by the snow stake method in Mizuho Plateau [1978, eng] **F-19831**
Study of formation of a surface snow layer [1978, eng] **F-19832**
Stratigraphic analyses of firn and ice at Mizuho Station [1978, eng] **F-21299**
Compiled stratigraphic data from cores drilled at Mizuho Station [1978, eng] **F-21307**
Okulova, L.S.
Catalog of polarity determinations for sectors of the interplanetary magnetic field from 1975 to 1976 [1978, rus] **K-21709**
Okutani, S.
Observations of auroral-zone precipitating electrons by antarctic rockets [1979, jap] **K-21676**
Data processing for auroral electron analysis [1979, jap] **K-21678**
Olcay, L.
Geology of the Gerlache Strait between 64 and 65 deg S, Chilean Antarctica [1976, spa] **E-21009**
Oldham, J.B.
Reconnaissance geologic map of the Boyd Glacier quadrangle, Marie Byrd Land, Antarctica [1977, eng] **E-19400**

Reconnaissance geological map of the Guest Peninsula quadrangle, Marie Byrd Land, Antarctica [1977, eng] E-19401
O'Lenic, E.A.
U.S. Navy global ice analysis and forecasting [1978, eng] F-20459
U.S. Navy global ice analysis and forecasting [1978, eng] F-20751
Oliunin, IU.V.
Water circulation along an Antarctica-Africa profile [1974, rus] J-19590
Horizontal circulation in the Drake Passage [1978, rus] J-20636
Current measurement by means of buoys in the Drake Passage [1978, rus] J-20637
Observations of water temperature variations in the Drake Passage, summer 1976 [1978, rus] J-20639
Water mass structure and geostrophic currents on the Antarctica-Africa profile [1978, rus] J-20650
Oliver, J.S.
Processes organizing contrasting benthic communities of McMurdo Sound [1977, eng] B-19608
Long-term experimental benthic studies in McMurdo Sound [1978, eng] B-21583
Observations on submerged glacial ice in McMurdo Sound, Antarctica [1978, eng] F-20392
Oliver, R.L.
Metamorphic geology of the Windmill Island, Antarctica: a preliminary account [1977, eng] E-20540
Olsen, E.
Antarctica: a deep-freeze storehouse for meteorites [1977, eng] E-19325
Olsen, E.J.
Eleven new meteorites from Antarctica, 1976-1977 [1978, eng] E-21124
Olson, B.E.
On the abyssal temperatures of the World Oceans [1968, eng] J-19544
Olson, D.B.
Eddies and ridges in the thermal structure south of New Zealand [1978, eng] J-21550
Olson, R.J.
Microbial investigations in the Ross Sea [1978, eng] B-21579
Omori, M.
Zooplankton fisheries of the world: a review [1978, eng] B-20831
Omoto, K.
Subglacial geomorphology of Mizuho Plateau and around Yamato Mountains, East Antarctica [1976, eng] E-19331
Geomorphic development of the Showa Coast, East Antarctica. Chronological interpretation of raised beaches based on levelings and radiocarbon datings [1977, eng] E-20226
Omura, H.
Preliminary report on morphological study of pelvic bones of the minke whale from the Antarctic [1978, eng] B-21649
O'Nions, R.K.
Petrogenetic significance of isotope and trace element variations in volcanic rocks from the Mid-Atlantic [1974, eng] E-19415
Ono, M.
Dry Valley Drilling Project—an international effort [1975, jap] E-19434
Onozawa, T.
Studies on proteases from antarctic krill [1977, jap] B-19512
Onuma, K.
Petrological studies of Yamato-74 meteorites (1) [1978, eng] E-19925
Onuma, N.
Oxygen isotopes in several Yamato meteorites [1978, eng] E-19931
Orheim, O.
Preliminary report of the 1976/77 Norwegian Antarctic Research Expedition [1977, eng] A-19778
Back to the Antarctic: new methods introduced by Norway's first large expedition in 16 years [1977, eng] A-20702
Global glacier mass balance variations during the past 300 years [1977, eng] F-20046
Orlenok, V.V.
Geomorphology of the ocean floor [1976, rus] E-19740
Orr, D.
Very low frequency electromagnetic phenomena: whistlers and micropulsations [1977, eng] K-20282
Orris, W.L.
Positive tissue fluid pressure in the feet of antarctic birds [1978, eng] B-21183
Osawa, Y.
Inactivation of enzymes and chemical change in antarctic krill as a result of boiling [1976, jap] B-19447
Osby, D.R.
Logging summary of the Dry Valley Drilling Project [1977, eng] E-19665
Paleohydrology of Taylor Valley, Antarctica inferred from pore ice in permafrost core [1977, eng] E-19999
Ose, M.
Riometer records of 30 MHz cosmic noise at Syowa Station Antarctica in 1976 [1977, eng] K-19361
Riometer records of 30 MHz cosmic noise at Syowa Station, Antarctica in 1977 [1978, eng] K-20998
Osipov, N.K.
Magnetic quiet-day solar daily variations in magnetically conjugate regions [1977, eng] K-19571
Magnetic quiet-day solar daily variations in magnetically conjugate regions [1977, eng] K-21398
Osmond, J.K.
Micromanganese nodules in deep-sea sediments: uranium-isotopic evidence for post-depositional origin [1976, eng] E-19315
Osnitskaia, L.K.
Photosynthetic bacteria from Lake Vanda (Antarctica) [1978, eng] B-21240
Ossaka, J.
View of the formation of saline waters in the dry valleys [1978, eng] F-20374
Osterman, L.E.
Late Quaternary paleoecology and paleoclimatology inferred from Ross Sea sediments [1978, eng] E-21575
Ostlund, H.G.
Antarctic tritium measurements [1978, eng] I-21617
Ostrekin, M.E.
Exploration in the Alasheyev Bight [1968, eng] G-20334
Seventh voyage of the R/V *Ob'* [1968, eng] J-20327
Osuga, D.T.
Penguin evolution: protein comparisons demonstrate phylogenetic relationship to flying aquatic birds [1976, eng] B-20927
Owens, A.G.
Assessment of individual performance in small antarctic groups. Part 1. OIC's rating scales [1967, eng] H-21245
Assessment of individual performance in small antarctic groups. Part 2. Ratings on the Leary interpersonal checklist [1967, eng] H-21246
Some biographical correlates of assessed performance in small antarctic groups [1968, eng] H-21247
Owens, E.J.
Atmospheric acoustic echo sounding investigations at the South Pole [1976, eng] I-21666
Owens, M.S.
Role of precipitation processes in chemistry of polar snows [1976, eng] F-21672
Oxman, B.H.
The antarctic regime: an introduction [1978, eng] M-21468
Oza, B.J.
First comparison of simultaneous IRIS, BUV, and ground-based measurements of total ozone [1978, eng] I-20626
Padden, R.R.
Initial results from a tracking receiver direetion finder for whistler mode signals [1978, eng] K-20502
Palacios M., O.
Radiocarbon dating of the last glaciation in Peru [1977, eng] E-19374
Paliza, O.
Sperm whales of the southeast Pacific. Part 3. Morphometry [1972, eng] B-21267
Pallisgaard, M.
New 60-megahertz antenna array for radio echo sounding [1978, eng] G-21643
Palmer, A.S.
Sedimentological investigations of the englacial debris bands and associated melt-out deposits in the snout of Taylor Glacier, Antarctica [1976, eng] E-19578
Palmer, K.F.
Progressive deformation and orogenic uplift at the southern extremity of the Andes [1979, eng] E-21320
Fossil marginal basin in the southern Andes [1974, eng] E-21327
Panfilov, B.G.
Reasons for incursions of female sperm whales into antarctic waters [1973, rus] B-20581
Pang, K.
On the survival of organic compounds in the polar regions of Mars [1978, eng] E-21093
Panov, V.V.
East Antarctic pack ice [1977, rus] F-19841
Papajewski, H.
Quality and tastiness of antarctic fish [1977, ger] B-20971

Papajewski, H. *(cont.)*
Processing and product development [1978, ger] **B-21451**
Mechanical processing of antarctic fish [1977, ger] **G-20970**
Pareek, R.S.
Southwest monsoon over India and its teleconnections with the middle and upper tropospheric flow patterns over the Southern Hemisphere [1978, eng] **I-20387**
Paren, J.G.
Electrical behaviour of finely divided ice [1978, eng] **F-21067**
Parin, N.V.
Results of the research cruises of FRV *Walther Herwig* to South America, 25. *Diplophos rebainsi* n.sp. (Osteichthyes, Stomiatodidei, Gonostomatidae), a new Gonostomatid fish from southern seas [1972, eng] **B-21489**
Parish, T.
Cold, low-level jet stream in the Bransfield Strait: an example of inertial flow [1977, eng] **I-19705**
Park, C.G.
Siple/Roberval VLF transmitting experiments [1977, eng] **K-19711**
Whistler precursors: a possible catalytic role of power line radiation [1977, eng] **K-19911**
Upper atmosphere research in Antarctica [1978, eng] **K-20291**
Very low frequency radio waves in the magnetosphere [1978, eng] **K-20294**
VLF wave activity during a magnetic storm: a case study of the role of power line radiation [1977, eng] **K-20510**
Electron density in the plasmasphere: whistler data on solar cycle, annual, and diurnal variations [1978, eng] **K-20534**
Transmitter simulation of power line radiation effects in the magnetosphere [1978, eng] **K-20997**
Magnetospheric effects of power line radiation [1978, eng] **K-21001**
Whistler observations of substorm electric fields in the nightside plasmasphere [1978, eng] **K-21059**
Effect of solar magnetic sectors on the vertical component of the atmospheric electrical field at Vostok [1978, rus] **K-21461**
Power line radiation in the magnetosphere [1978, eng] **K-21629**
Park, T.
Calanoid copepods (Aetideidae and Euchaetidae) from antarctic and subantarctic waters [1978, eng] **B-21494**
Parker, B.
Diamond drilling in environmentally sensitive areas—environmental impact: monitoring and assessment [1976, eng] **E-19463**
Parker, B.C.
First environmental impact monitoring amd assessment in Antarctica. The Dry Valley Drilling Project [1977, eng] **B-19314**
Ecosystem studies and mathematical model for Lake Bonney, Taylor Valley, southern Victoria Land [1977, eng] **B-19610**
Baseline microbiological data for soils of the Dufek Massif [1977, eng] **B-19611**
Environmental impact in Antarctica [1978, eng] **B-19978**
Ross Ice Shelf Project environmental impact statement July, 1974 [1978, eng] **B-19979**
Environmental appraisal for the Dry Valley Drilling Project phases III, IV, V (1973-74, 1974-75, 1975-76) [1978, eng] **B-19980**
Summary of environmental monitoring and impact assessment of the DVDP [1978, eng] **B-19982**
Potential impact on Lake Bonney of activities associated with modeling freshwater antarctic ecosystems [1978, eng] **B-19983**
Terrestrial adaptations in polar regions [1978, eng] **B-20207**
Nutrient fluxes in Lake Bonney—a meromictic antarctic lake [1977, eng] **B-20892**
Ecosystem comparisons of oasis lakes and soils [1978, eng] **B-21605**
Development and use of a mathematical model for an antarctic lake [1978, eng] **E-21238**
Nitrogen in south polar ice and snow: tool to measure past solar, auroral, and cosmic ray activities [1977, eng] **F-19679**
Non-biogenic fixed nitrogen in Antarctica and some ecological implications [1978, eng] **F-19915**
Solar activity records planetary ice caps [1978, eng] **F-21407**
Fixed nitrogen in antarctic ice and snow [1978, eng] **F-21530**
Parker, R.L.
Bounding the thickness of the oceanic magnetized layer [1977, eng] **L-20013**
Parkhurst, R.J.
Petrogenetic significance of isotope and trace element variations in volcanic rocks from the Mid-Atlantic [1974, eng] **E-19415**
Parkinson, A.J.
Respiratory virus infection late in isolation at the South Pole [1978, eng] **H-21607**
Parkinson, C.L.
Numerical simulation of the annual cycle of sea ice in the Arctic and Antarctic [1978, eng] **F-20700**
Summary of a large-scale sea-ice model [1977, eng] **F-20890**
Large-scale numerical model of sea ice [1979, eng] **F-21132**
Numerical model of antarctic sea ice [1978, eng] **F-21542**
Parmelee, D.
Ecological and behavioral adaptations to antarctic environments [1977, eng] **B-19605**
Parmelee, D.F.
Impact of unfavorable ice conditions on bird productivity at Palmer Station during the 1977-78 field season [1978, eng] **B-21589**
Parodi, R.
Improvement of scientific systems aboard ARA *Islas Orcadas* [1977, eng] **G-19727**
Parodi, R.D.
Polar Front zone in the western Scotia Sea, winter 1977 [1978, eng] **J-21547**
Paschal, E.W.
Jupiter: a new tool for magnetospheric research [1978, eng] **K-21630**
Paterson, W.S.B.
Investigation of creep instability as a mechanism for glacier surges [1978, eng] **F-21203**
Patliakevich, N.D.
Basic reading list on penguins (1954-1974) [1977, rus] **B-19542**
Paton, B.E.
Powerful electron accelerator for active space experiments [1978, eng] **K-21410**
Patriat, P.
Oceanographic activities in the French austral and antarctic territories [1976, fre] **D-20349**
Patterson, S.L.
Stirring processes within the antarctic Polar Front Zone [1977, eng] **J-19626**
Paulin, C.D.
Diurnal rhythm of activity by the Adelie penguin [1977, eng] **B-19450**
Pavlov, A.A.
Geodetic work in Alasheyev Bight [1968, eng] **C-20341**
Payne, M.R.
Growth of a fur seal population [1977, eng] **B-19474**
Payne, R.R.
Pleistocene manganese pavement production: its relationship to the origin of manganese in the Tasman Sea [1972, eng] **E-19377**
Pe, G.G.
Cenozoic clay mineralogy from D.S.D.P. holes on the continental margin of the Australia-New Zealand sector of Antarctica [1977, eng] **E-20177**
Pearse, J.S.
Reproductive periodicities in several contrasting populations of *Odontaster validus* Koehler, a common Antarctic asteroid [1965, eng] **B-19252**
Peat, N.
Snow dogs [1978, eng] **G-20715**
Peden, A.E.
Systematic review of the fish genus *Lycodapus* (Zoarcidae) with descriptions of two new species [1978, eng] **B-21428**
Peel, D.A.
Snow accumulation, conductance and temperature inland from Halley Bay [1976, eng] **F-19545**
Search for organochlorine residues in antarctic snow [1977, eng] **F-20114**
Spatial distribution of 10 m temperatures in the Antarctic Peninsula [1978, eng] **I-20653**
Pefaur, J.E.
Ecological studies in Robert Island (South Shetland) 7. Birds of Robert Island Peninsula [1972, spa] **B-19793**
Peiffer, S.
Penguin *(Aptenodytes forsteri)* myoglobin. A 70 residue N-terminal sequence [1973, eng] **B-19393**
Peirce, J.W.
Northward motion of India since the Late Cretaceous [1978, eng] **L-19802**
Peixoto, J.P.
Seasonal variability in the pole-to-pole modes of water vapor transport during the IGY [1978, eng] **I-21147**
Pelseneer, J.
Adrien-Victor-Joseph de Gerlache de Gomery [1976, fre] **A-19363**
Peltier, W.R.
Creep instability analysis of the Antarctic and Greenland ice sheets [1979, eng] **F-21317**

Penkett, S.A.
Measurement of carbon tetrafluoride in the atmosphere [1979, eng] **I-21254**
Perch-Nielsen, K.
General synthesis of Central and South Atlantic drilling results, Leg 39, Deep Sea Drilling Project [1977, eng] **E-19851**
Pereiaslova, N.K.
Characteristics of proton distribution in the polar caps during the September 7, 1973 intrusion [1976, rus] **K-19496**
Pereverzev, N.A.
Identification and biological characteristics of strains of psychrophilic bacteria isolated in diarrhea of polar workers and from antarctic lake water [1978, eng] **H-21427**
Permitin, IU.E.
Fecundity and reproductive biology of icefish (Chaenichthidae), fish of the family Muraenolepidae and dragonfish (Bathydraconidae) of the Scotia Sea (Antarctica) [1973, eng] **B-20822**
Feeding of fishes of the families Nototheniidae and Chaenichthyidae in the South Orkney Islands [1978, eng] **B-21400**
Species composition and zoogeographic analysis of bottom fish fauna in the Scotia Sea [1977, rus] **B-21433**
Pervushin, A.S.
Reasons for incursions of female sperm whales into antarctic waters [1973, rus] **B-20581**
Fish as sperm whale prey in Southern Ocean whaling zones [1973, rus] **B-20582**
Effect of hydrological conditions in the Scotia Sea on aggregations of baleen whales [1973, rus] **B-20584**
Peters, J.
Sub-antarctic house mice: colonization, survival and selection [1978, eng] **B-19952**
Petersen, U.
Evaluation of krill meal as protein feed [1978, ger] **A-21253**
Peterson, J.T.
Geophysical monitoring for climatic change at the South Pole [1977, eng] **I-19695**
Geophysical monitoring for climatic change, No.6. Summary report 1977 [1978, eng] **I-21405**
Petrosov, V.V.
Effect of extreme antarctic conditions on blood serum protein composition in polar workers [1978, rus] **H-21435**
Human immunology under antarctic conditions [1978, rus] **H-21708**
Petukhov, I.A.
Deformation of the sides of a deep borehole in the antarctic ice cover at Vostok Station [1978, rus] **F-20725**
Petushko, G.L.
Behaviour of krill in photic and electrical fields [1970, eng] **B-20383**
Philberth, K.
Nuclear energy risks and nuclear waste disposal in ice [1976, ger] **G-19355**
Disposal of radioactive waste in ice sheets [1977, eng] **G-19759**
Picard, A.
Visual observations of auroras: Dumont d'Urville Base [1977, fre] **K-19739**
Picciotto, E.E.
On the origin of mineral impurities in ice [1977, fre] **F-20112**
On the origin of mineral impurities in ice [1979, eng] **F-21262**
Pierce, J.W.
Mineralogy and major element chemistry of suspended sediments from the Chilean archipelago: R/V *Hero* cruise 76-4 [1977, eng] **E-19642**
Geochemistry of the fine size fraction of bottom sediments from the southern Argentine shelf [1978, eng] **E-21577**
Suspended particulate matter on the southern Argentine shelf [1979, eng] **J-21115**
Pierotti, D.
Atmospheric distribution of nitrous oxide [1977, eng] **I-20498**
Global and regional N20 measurements [1978, eng] **I-21481**
Pierrou, E.J.
Antarctic toponymy [1975, spa] **A-20263**
Piggott, W.R.
Importance of the Antarctic in atmospheric sciences [1977, eng] **K-19480**
Antarctic ionospheric research [1978, eng] **K-20298**
High latitude supplement to the *URSI Handbook on Ionogram Interpretation and Reduction* [1975, eng] **K-20378**
Advantages of the Antarctic for ionospheric research [1977, eng] **K-21716**
Pillsbury, R.D.
Variability of deep flow in the Drake Passage from year-long current measurements [1977, eng] **J-19319**
FDRAKE 77 *Yelcho* [1978, eng] **J-21549**
Pinto-Coelho, A.
Antarctic influence on Brazil's environment [1977, eng] **I-21062**
Pinto, J.E.B.
Extracellular water distribution and circulatory function of the penguin [1970, eng] **B-19746**
Pinto, M.C.W.
The international community and Antarctica [1978, eng] **M-21475**
Piontelli, E.
Microsporum magellanicum and *Cunninghamella antarctica,* new species isolated from Australic and antarctic soil of Chile [1977, eng] **B-19312**
Piper, D.J.W.
Cenozoic clay mineralogy from D.S.D.P. holes on the continental margin of the Australia-New Zealand sector of Antarctica [1977, eng] **E-20177**
Use of ice rafted marine sediments in determining glacial conditions [1976, eng] **F-20402**
Pirre, M.
Observations of the entry of solar protons into the magnetosphere by use of riometers [1974, eng] **K-20136**
Ion analyzers for measurement of D.C. electric field and ion temperature [1978, eng] **K-21418**
Pisias, N.
Cenozoic hiatuses in pelagic sediments [1978, eng] **J-21020**
Pittock, A.B.
Climatic change and variability: a southern perspective [1978, eng] **I-21105**
Pizarro, C.
Musci taxocenosis of the Fildes Peninsula (King George Island, South Shetland Islands) [1977, spa] **B-20914**
Plakhotnik, A.
Large-scale circulation of the world ocean [1977, rus] **J-20446**
Platt, H.M.
Hydrocarbons in the marine environment. 2. Distribution of *n*-alkanes in the fauna and environment of the subantarctic island of South Georgia [1978, eng] **J-20598**
Platzman, G.W.
Normal modes of the World Ocean. Part I. Design of a finite-element barotropic model [1978, eng] **J-20248**
Playford, G.
Carboniferous and Permian palynostratigraphy in Australia and Antarctica: a review [1977, eng] **E-20396**
Plume, R.W.
Revision of the existing stratigraphy of the New Mountain Sandstone (Beacon Supergroup), south Victoria Land, Antarctica [1978, eng] **E-20848**
Stratigraphy, petrology and sedimentology of the New Mountain sandstone at Plane Table, Asgard Range, South Victoria Land, Antarctica [1974, eng] **E-21495**
Poehls, K.A.
Inter-arc basins: a kinematic model [1978, eng] **E-20622**
Poggenpol, V.S.
Influence of a stay lasting several months under conditions of hypoxia, hypokinesia and isolation on the temperature of the body and skin surface. [1975, eng] **H-20986**
Poggi, A.
Comparison of energy balance measurements at two stations on the Ampère Glacier (Kerguelen Islands) [1978, fre] **F-20734**
Poiarkov, S.G.
Structure of large-scale circulation of Atlantic Ocean waters [1977, eng] **J-19741**
Large-scale characteristics of the distribution of antarctic intermediate waters in the world ocean [1978, eng] **J-20138**
Polar Oceans Conference, Montreal, May 1974
Polar oceans [1977, eng] **J-20022**
Polar record
British Antarctic Survey, 1976-77 [1977, eng] **A-19346**
Fifty-first annual report on the work of the Scott Polar Research Institute [1978, eng] **A-20323**
British Antarctic Survey, 1977-78 [1978, eng] **A-21153**
Conservation of antarctic seals and birds [1978, eng] **B-20794**
Private research expedition to Antarctica, 1977-78 [1979, eng] **D-21718**
Antarctic resources—effects of mineral exploration [1977, eng] **E-19350**
Report of the Ninth Antarctic Treaty Consultative Meeting, London, 1977 [1978, eng] **M-20324**

Poliakov, M.M.
Geology of Marie Byrd Land and Eights Coast [1976, rus] **E-19277**
Polonskaia, M.N.
On the biological value of krill paste [1971, rus] **B-19410**
Polosatov, M.V.
Assessing thermoregulation in wintering personnel at a coastal antarctic station [1977, rus] **H-21144**
Effect of extreme antarctic conditions on the psychosomatic state of personnel [1977, rus] **H-21145**
Pomerantz, M.A.
Cosmic ray intensity variations [1977, eng] **K-19722**
Cosmic rays [1978, eng] **K-20292**
Symmetrical equator-pole anisotropy during an unusual cosmic ray storm [1978, eng] **K-20628**
Cosmic ray intensity variations [1978, eng] **K-21635**
Pommeranz, T.
Micronekton and zooplankton [1978, ger] **B-21446**
Ponte, L.
Alien ice: an evaluation of some subsidiary effects and concomitant problems in iceberg utilization [1978, eng] **F-20450**
Popov, A.G.
Ocean floor structure in the southern Atlantic Ocean [1978, rus] **E-20719**
Popov, I.K.
Using side-looking radar for studying iee undersurfaces [1978, rus] **F-20616**
Instruments for studying underwater portions of Southern Ocean icebergs [1978, rus] **F-20654**
Instrument studies of the submerged parts of icebergs in the Southern Ocean [1979, eng] **F-21263**
Popov, L.A.
Biology of the South Shetland Islands leopard seal [1977, rus] **B-19885**
Data on the biology of crabeater seals in the South Shetland Islands [1977, rus] **B-19888**
Kerguelen seals on King George Island [1977, rus] **B-19892**
King George Island southern elephant seals [1978, rus] **B-21464**
Observations on King George Island birds [1978, rus] **B-21465**
Popplewell, K.B.
Dating of geochemical events in Lake Bonney, Antarctica, and their relation to glacial and climate changes [1977, eng] **E-20757**
Post, A.
Description of two species of the genus *Notolepis, N. coatsi* Dollo, 1908 and *N. annulata* sp.n. from the Antarctic Sea (Osteichthyes, Myctophiformes, Paralepididae) [1978, ger] **B-20559**
Potapov, V.A.
Water mass structure and geostrophic currents on the Antarctica-Africa profile [1978, rus] **J-20650**
Potemra, T.A.
Small-scale transverse magnetic disturbances in the polar regions observed by Triad [1978, eng] **K-20500**
Field-aligned currents in the south polar cusp and their relationship to the interplanetary magnetic field [1978, eng] **K-21058**
Observations of low-energy electrons from AE-C in the south polar cusp during the geomagnetic storm of September 21, 1977 [1978, eng] **K-21353**
Potgieter, T.I.
Surface temperature and sea-level pressure at Norway Station and Sanae [1976, eng] **I-19901**
Poulter, T.C.
Underwater vocalization and behavior of pinnipeds [1968, eng] **B-20867**
Pourchet, M.
Accumulation of snow and radioactive debris in Antarctica: a possible refined radiochronology beyond reference levels [1977, eng] **F-20117**
Powell, A.W.B.
Antarctic mollusca [1971, eng] **B-20926**
Powell, C.M.
Spreading history of the eastern Indian Ocean and India's northward flight from Antarctica and Australia: Discussion and reply [1978, eng] **E-20529**
Powell, R.D.
Sedimentation conditions in Taylor Valley, Antarctica, from DVDP cores [1978, eng] **E-20372**
Prabhakara, C.
Study of the lower stratospheric thermal stucture and total ozone from Nimbus-4 IRIS [1976, eng] **I-20786**
Prager, E.M.
Penguin evolution: protein comparisons demonstrate phylogenetic relationship to flying aquatic birds [1976, eng] **B-20927**
Premchand, K.
Hydrological characteristics and transequatorial transport in the west Indian Ocean [1976, eng] **J-20787**
Preobrazhenskaia, M.A.
Russian names in Antarctic toponymy [1978, rus] **A-21705**
Press Briefing Seminar on the Future of Antarctica, London, July 25, 1977
The future of Antarctica [1977, eng] **M-19580**
Prévost, J.
Bird ringing in the Crozet Archipelago, Kerguelen, New Amsterdam and St. Paul Islands [1976, eng] **B-20777**
Note on the ringing of birds in the Kerguelen archipelago since 1951 [1972, fre] **B-20897**
Bird ringing in the Crozet Archipelago, Kerguelen, New Amsterdam and St. Paul Islands [1976, eng] **B-21372**
Price, P.L.
Carboniferous and Permian palynostratigraphy in Australia and Antarctica: a review [1977, eng] **E-20396**
Priddle, J.
Biology of an antarctic aquatic moss community [1978, eng] **B-21289**
Prikhod'ko, I.I.
Using dehydrated "Okean" protein paste in foods [1976, rus] **B-20821**
Prior, E.J.
First comparison of simultaneous 1R1S, BUV, and ground-based measurements of total ozone [1978, eng] **I-20626**
Proserpio, C.
Taquetren Formation in the Chubut River valley, its stratigraphic relationships within Patagonia, and similarities with Mount Flora, Antarctica [1975, spa] **E-19860**
Prosser, N.
Measurement of carbon tetrafluoride in the atmosphere [1979, eng] **I-21254**
Prudhoe, S.
Cestodes from fish, birds and whales [1969, eng] **B-19958**
Pulinets, S.A.
Broad-band wave measurements in the ARAKS experiment [1978, eng] **K-21413**
Purdy, G.M.
Sediment distribution around the Bouvet triple junction [1978, eng] **E-20358**
Purucker, M.E.
Polarity zonations, magnetic intensities, and the correlation of Miocene and Pliocene DVDP cores, Taylor Valley, Antarctica [1978, eng] **L-20364**
Quilhot P., W.
Lichens of Navarino Island. Pt. 1. Preliminary systematic and ecological study [1977, spa] **B-20913**
Quilty, P.G.
Late Jurassic bivalves from Ellsworth Land, Antarctica: their systematics and paleogeographic implications [1977, eng] **E-20755**
Rabinowitz, P.D.
Falkland escarpment and Agulhas fracture zone: the boundary between oceanic and continental basement at conjugate continental margins [1976, eng] **L-19513**
Racadot, J.
Slides on the antehypophyseal histology of the Weddell seal *(Leptonychotes weddelli* Lesson) [1971, fre] **B-19798**
Radok, U.
Snow drift [1977, eng] **F-19758**
Climatic roles of ice: a contribution to the International Hydrological Programme (IHP) [1978, eng] **F-21282**
Raghuram, R.
VLF line radiation in the Earth's magnetosphere and its association with power system radiation [1975, eng] **K-20507**
Raisbeck, G.M.
Measurement of Be-10 in 1,000- and 5,000-year-old antarctic ice [1978, eng] **F-20980**
Rakusa-Suszczewski, S.
Biology and respiration of the antarctic Amphipoda *Paramoera walkeri* Stebbing in the summer [1973, eng] **B-20218**
Chemical composition of the antarctic Amphipoda *Paramoera walkeri* Stebbing and chromatographic analysis of its lipids [1974, eng] **B-20219**
Respiration and osmoregulation as the expression of the adaptation of the invertebrates and fishes to life under hypostenothermic conditions [1975, eng] **B-20220**
Ralph, R.
Record of *Mytilus edulis* L. from South Georgia [1976, eng] **B-19563**

Ramaswamy, C.
Southwest monsoon over India and its teleconnections with the middle and upper tropospheric flow patterns over the Southern Hemisphere [1978, eng] **I-20387**
Ramm, H.E.
Acoustic sounder operations at South Pole Station [1977, eng] **I-19702**
Ramsay, A.T.S.
Oceanic micropalaeontology [1977, eng] **E-20563**
Sedimentological clues to palaeo-oceanography [1977, eng] **E-20569**
Ramseier, R.O.
Integrated approach to the remote sensing of floating ice [1977, eng] **F-19861**
Ice sheet topography by satellite altimetry [1978, eng] **F-20414**
Rancitelli, L.A.
Terrestrial ages of four Allan Hills meteorites: consequences for antarctic ice [1979, eng] **E-21104**
Rand, J.H.
Ross Ice Shelf Project drilling, October-December 1976 [1977, eng] **F-19691**
Rasmussen, R.A.
Analysis of halocarbons in Antarctica [1977, eng] **I-19696**
Atmospheric distribution of nitrous oxide [1977, eng] **I-20498**
Measurement of carbon tetrafluoride in the atmosphere [1979, eng] **I-21254**
Global and regional N20 measurements [1978, eng] **I-21481**
Halocarbon and N2O analyses in Antarctica [1978, eng] **I-21619**
Ratiner, L.
[Press briefing] [1977, eng] **M-19581**
Rautiainen, IU.S.
Experiences of the computer group [1977, rus] **A-19890**
Raven, P.H.
Novelties in Australian *Epilobium* (Onagraceae) [1977, eng] **B-19808**
Ravich, M.G.
Geological structure of Mac. Robertson Land (East Antarctica) [1978, rus] **E-20600**
Tectonic zonation and geological evolution of Antarctica [1978, rus] **E-20674**
Soviet geological research in Antarctica [1978, rus] **E-21697**
Comparative study of bedrock in the Adelaide (Australia) and Ross (Antarctica) geosynclinal areas [1978, rus] **E-21698**
Comparison of geological structure of southeast Indostan and Sri Lanka with Enderby Land, Mac. Robertson Land and Princess Elizabeth Land in East Antarctica [1978, rus] **E-21699**
Antarctic metamorphic facies [1978, rus] **E-21700**
Raymond, C.
Finite element calculation of ice deformation [1977, eng] **F-19677**
Raymond, J.A.
Adsorption inhibition as a mechanism of freezing resistance in polar fishes [1977, eng] **B-20021**
Raymont, J.K.B.
Biochemical studies on marine zooplankton. 12. Further investigations on *Euphausia superba* Dana [1974, eng] **B-21251**
Raynaud, D.
Gas content of ice caps [1977, fre] **F-19424**
Total gas content in polar ice: rheological and climatic implications [1977, eng] **F-20126**
Composition of gas contained in polar ice [1977, fre] **F-20129**
Gas inclusions in glacier ice; their use as indicators of formation site in polar ice; climatological and rheological applications [1976, fre] **F-20845**
Rayner, J.N.
Numerical model of antarctic sea ice [1978, eng] **F-21542**
Recorded sound
Antarctic wildlife sounds [1973, eng] **B-19365**
Redon F., J.
Lichens of Navarino Island. Pt. 1. Preliminary systematic and ecological study [1977, spa] **B-20913**
Reed, S.C.
Ross Ice Shelf Project environmental impact statement July, 1974 [1978, eng] **B-19979**
Reichle, R.A.
Biota of the antarctic pack ice: R/V *Hero* cruise 76-6 [1977, eng] **B-19598**
Reid, A.M.
Characterization of crust formation on a parent body of achondrites and the moon by pyroxene crystallography and chemistry [1976, eng] **E-20228**
Reid, J.L.
Deep currents in the northwestern part of the Argentine Basin [1977, eng] **J-19631**
Sea-surface temperature, salinity, and density of the Pacific Ocean in summer and in winter [1969, eng] **J-21073**
Reid, J.S.
Ionospheric origin for Pi 1 micropulsations [1976, eng] **K-19575**
Reilly, W.I.
Geomagnetic field in New Zealand in 1975 [1978, eng] **K-20528**
Reimers, E.
Fifty years of service in polar regions [1978, eng] **A-21259**
Reinacher, E.
Krill meal and other protein sources as substitutes of fishmeal in rainbow trout diets: sensory investigations of influences on eating quality and shelf life [1978, ger] **A-21220**
Rème, H.
Electron spectrometers for the study of artificially injected particles during the ARAKS experiments [1978, eng] **K-21414**
Renard, R.J.
History, operation and performance of an experimental automatic weather station in Antarctica [1977, eng] **I-19362**
Airborne Research Data System (ARDS): Description and an evaluation of meteorological data recorded during selected 1977 antarctic flights [1978, eng] **I-21006**
Renner, R.G.B.
Aeromagnetic survey over southern Graham Land: a preliminary report [1976, eng] **L-19549**
Renzetti, J.L.
Dismantling McMurdo's reactor [1977, eng] **G-19489**
Retamal R., M.A.
Contribution to the knowledge of antarctic decapods [1976, spa] **B-21013**
Rex, D.C.
Geochronology in relation to the stratigraphy of the Antarctic Peninsula [1976, eng] **E-19548**
Cenozoic volcanism in the Antarctic [1977, eng] **E-20277**
Reyna, E.
Surface layer kinematics of the circumpolar current as inferred from Nimbus 6 [1978, eng] **J-21546**
Reynolds, R.L.
Paleomagnetic results from the Lassiter Coast, Antarctica, and a test for oroclinal bending of the Antarctic Peninsula [1978, eng] **L-20862**
Rhodes University, Grahamstown, South Africa
Monthly bulletin of ionospheric characteristics observed at SANAE Base, Antarctica [1967, eng] **K-20225**
Riabinin, I.F.
Experimental use of computers for data analysis in medical geographical research [1978, rus] **H-20614**
Human adaptation to unusual living conditions [1978, rus] **H-21031**
Results of clinical and biochemical studies of acclimatization in workers in coastal Antarctica [1978, rus] **H-21036**
Richards, D.A.
Cruise data report: R/V *Chain* Cruise 115 Legs 3 and 4, Southlant Expedition [1974, eng] **J-21000**
Richardson, E.S.
Early Cenozoic global plate reorganization [1978, eng] **E-20409**
Rietveld, M.T.
Micropulsations observed by whistler-mode transmissions [1978, eng] **K-20979**
Rigourd, J.F.
Study of the climate of the Kerguelen Islands and subantarctic region of the Indian Ocean. Climatology of Port-aux-Français [1977, fre] **I-19464**
Riordan, A.J.
Air temperature and two-dimensional wind profiles in the lowest 32 meters as a function of bulk stability [1977, eng] **I-20934**
Stability-related wind spiraling in the lowest 32 meters [1977, eng] **I-20935**
Variations of temperature and air motion in the 0- to 32-meter layer at Plateau Station, Antarctica [1977, eng] **I-20936**
Risebrough, R.W.
Investigations at dome C in the austral summer of 1976-1977 [1977, eng] **F-19678**
Rivolier, J.
Medical research in the Antarctic, particularly in the French austral and antarctic territories [1978, fre] **H-20232**
Medical care in French austral and antarctic territories [1976, fre] **H-20345**
Robert, J.
Distribution of artificial tritium in firn samples from East Antarctica [1977, eng] **F-20116**

Roberts, B.
International cooperation for antarctic development: the test for the Antarctic Treaty [1978, eng] **M-20789**
Roberts, B.B.
Conservation in the Antarctic [1977, eng] **B-20275**
Roberts, D.M.
Icebergs as a heat sink for power generation [1978, eng] **F-20487**
Roberts, P.E.
Distribution of reactive phosphorus and plankton in relation to upwelling and surface circulation around New Zealand [1978, eng] **J-20805**
Robin, G. de Q.
International studies of ice sheet and bedrock [1977, eng] **F-20279**
Robinson, E.
Analysis of halocarbons in Antarctica [1977, eng] **I-19696**
Robinson, E.S.
Geological structure of the Transantarctic Mountains and adjacent ice covered areas, Antarctica [1964, eng] **E-19508**
Provisional cotidal charts for the southern Ross Sea [1977, eng] **J-19623**
Ocean tide and waves beneath the Ross Ice Shelf, Antarctica [1979, eng] **J-21099**
Spatial variation of the K1, O1, and M2 constituents of the southern Ross Sea tide [1978, eng] **J-21556**
Ocean wave measurements at the RISP J-9 camp [1978, eng] **J-21557**
Robinson, P.
Potassium-argon ages of schists from Chatham Island, New Zealand Plateau, southwest Pacific [1977, eng] **E-19467**
Robinson, P.H.
Quaternary stratigraphy and glacial history of the Lower Taylor Valley, Antarctica [1978, eng] **E-21354**
Glacial deposits and the Taylor Glacier [1978, eng] **F-20319**
Rodgers, E.B.
Study of the lower stratospheric thermal stucture and total ozone from Nimbus-4 IRIS [1976, eng] **I-20786**
Rodina, R.I.
Peripheral blood indicators in wintering 15th SAE personnel at Vostok [1977, rus] **H-21141**
Rodman, M.R.
Southern ocean temperature gradient near 2C [1977, eng] **J-21025**
Roldugin, V.K.
High sensitivity optical equipment for detection of weak luminous objects [1978, eng] **K-21422**
Romanenko, A.M.
Effect of a new food product, krill paste, on chemical carcinogenesis [1976, rus] **B-20431**
Romanov, A.A.
Features of the formation of the Balleny ice massif and drift of the *Ob'* [1978, rus] **F-20738**
Romanov, E.V.
Methods and results of the gradient and micropulsation measurements of air temperature and wind velocity [1977, rus] **I-20427**
Romantsov, V.A.
Drake Passage water masses in the summer [1978, rus] **J-20640**
Water mass structure and geostrophic currents on the Antarctica-Africa profile [1978, rus] **J-20650**
Rona, P.A.
Early Cenozoic global plate reorganization [1978, eng] **E-20409**
Ronan, T.E., Jr.
Life below the Ross Ice Shelf, Antarctica [1979, eng] **B-21101**
Miocene glaciomarine sediments from beneath the southern Ross Ice Shelf, Antarctica [1979, eng] **E-21095**
Miocene glaciomarine sediments from site J-9, Ross Ice Shelf, Antarctica [1978, eng] **E-21573**
Sediments and life under the Ross Ice Shelf (J-P), Antarctica [1978, eng] **E-21586**
Rongstad, O.
Colonial behavior of antarctic marine mammals in eastern McMurdo Sound [1977, eng] **B-19597**
Roschke, N.
Analysis of krill, krill products and antarctic fish species [1977, ger] **B-20557**
Variability in protein and fat content of krill *(Euphausia superba* Dana) [1978, ger] **B-21345**
Processing and product development [1978, ger] **B-21451**
Processing of krill [1976, ger] **G-20967**
Quality of preservation of antarctic fish and krill products [1977, ger] **G-20972**
Measuring moisture in krill meal [1977, ger] **G-20976**
Rose, K.E.
Effect of climatic warming on the West Antarctic ice sheet [1979, eng] **F-21404**
Rosen, J.M.
Balloon observations of a particle layer injected by a stratospheric aircraft at 23 km [1978, eng] **I-20625**
Balloon sounding the stratospheric sulfate aerosol layer [1976, eng] **I-21667**
Rosen, R.D.
Seasonal variability in the pole-to-pole modes of water vapor transport during the IGY [1978, eng] **I-21147**
Rosenberg, J.
Overview of the organizational, management, economic and socio-political aspects of transporting icebergs from Antarctica to the United States [1978, eng] **F-20483**
Rosenberg, T.J.
Electron precipitation associated with very low frequency chorus and thunderstorm electric fields [1977, eng] **K-19712**
Energetic particle precipitation from the magnetosphere [1978, eng] **K-20293**
High time resolution riometer studies of magnetospheric electron precipitation [1978, eng] **K-21623**
Precipitating electrons observed from balloons launched near the conjugate point of Siple Station, Antarctica [1978, eng] **K-21624**
Rosliakov, V.N.
Using side-looking radar for studying ice undersurfaces [1978, rus] **F-20616**
Rounsevell, D.E.
Geographic variation in the size of an antarctic mite *Tydeus erebus* Strandtmann (Acarina:Prostigmata) [1978, eng] **B-20075**
Populations of introduced arthropods at Australian antarctic stations [1978, eng] **B-20994**
Roux, D.
Perturbation of upper ionospheric profile associated with the magnetospheric cleft in local summer in Antarctica [1977, fre] **K-19335**
Rowe, G.H.
Petrographic and paleontological study of lower Tertiary erratics from Quaternary moraines, Black Island, Antarctica [1974, eng] **E-21656**
Rowley, P.D.
In Madison: Antarctic reviewed [1977, eng] **A-19307**
Geologic studies in Orville Coast and eastern Ellsworth Land, Antarctic Peninsula [1978, eng] **E-21501**
Roy, C.R.
Loss of fixed nitrogen from soils by nitric oxide exhalation [1978, eng] **F-20982**
Roy, J.L.
What happened to the high-latitude palaeomagnetic poles [1978, eng] **L-20286**
Royal Society of New Zealand. National Committee for Antarctic Research
Summary of research programmes, 1976 and proposed research programmes, 1978 [1977, eng] **A-19857**
Summary of research programmes, 1973, and proposed research programmes, 1975: Report No.16 to SCAR [1974, eng] **A-20020**
New Zealand antarctic research 1978 report [1978, eng] **A-21178**
Rubenchik, B.L.
Effect of a new food product, krill paste, on chemical carcinogenesis [1976, rus] **B-20431**
Ruddiman, W.F.
Investigations of Quaternary climate based on planktonic foraminifera [1977, eng] **E-20565**
Rudge, M.R.
History and present status of goats on the Auckland Islands (New Zealand subantarctic) in relation to vegetation changes induced by man [1977, eng] **B-19806**
Note on the food of feral pigs *(Sus scrofa)* of Auckland Island [1976, eng] **B-20838**
Case for controlling the distribution of the tree daisy *(Olearia lyallii)* Hook.f. in its type locality, Auckland Island [1976, eng] **B-20839**
Goats on Auckland Islands [1978, eng] **B-20903**
Rudoĭ, A.N.
Glaciological investigations along the Mirny-Pionerskaya-Dome C profile [1978, rus] **F-21389**
Ruivo, M.
[Press briefing] [1977, eng] **M-19582**
Rumball, E.I.
Modelling the exclusive economic zone enforcement problem [1978, eng] **J-21285**

Rumiantsev, S.A.
Dependence of the north-south anisotropy of cosmic rays on the orientation of interplanetary shock waves [1975, eng] **K-21165**
Rundle, A.S.
Channel Country fluvial sands and associated facies of central-eastern Australia: modern analogues of Mesozoic desert sands of South America [1979, eng] **E-21248**
Rutford, R.H.
Polar research: status and prospectus [1978, eng] **A-20209**
Ross Ice Shelf Project environmental impact statement July, 1974 [1978, eng] **B-19979**
Ruzhin, IU.IA.
Ground-based observations of h.f. radioemission in ARAKS [1978, eng] **K-21425**
Ryman, D.H.
Group homogeneity, compatibility and accomplishment [1967, eng] **H-21074**
Factors affecting the stability of job attitudes in long-term isolated groups [1970, eng] **H-21197**
Sackett, W.M.
Some observations on the stable carbon isotope composition of dissolved and particulate organic carbon in the marine environment [1978, eng] **J-20579**
Saenko, A.F.
Methodology of Adélie penguin mass blood sampling and results of serological studies [1977, rus] **B-19886**
Reaction of human thermoregulatory system to local chilling at different periods of the antarctic winter [1978, rus] **H-21457**
Saez G., A.
Argentine antarctic as you've never seen it [1971, spa] **A-20271**
Saflekos, N.A.
Small-scale transverse magnetic disturbances in the polar regions observed by Triad [1978, eng] **K-20500**
Field-aligned currents in the south polar cusp and their relationship to the interplanetary magnetic field [1978, eng] **K-21058**
Sagalyn, R.C.
Polar cap electric field structures with a northward interplanetary magnetic field [1979, eng] **K-21321**
Sagar, P.M.
Diurnal rhythm of activity by the Adelie penguin [1977, eng] **B-19450**
Birds of the Western Chain Snares Islands, New Zealand [1977, eng] **B-19451**
Birds of the 1976-77 Snares Islands expedition [1977, eng] **B-19907**
Breeding of antarctic terns at the Snares Islands, New Zealand [1978, eng] **B-20237**
Sagdeev, R.Z.
The ARAKS project [1978, eng] **K-21408**
Sahrhage, D.
Antarctic krill—food for the future [1975, ger] **B-20290**
Research and exploration of the resources of krill and food fish in the Antarctic. Report on the 1975/76 Antarctic Expedition of the Federal Republic of Germany [1977, ger] **B-21118**
Length-weight correlation in antarctic krill, *Euphausia superba* [1978, ger] **B-21346**
Antarctic Expedition 1975-1976 of the Federal Republic of Germany [1978, ger] **B-21443**
Course of the Antarctic Expedition of the Federal Republic of Germany [1978, ger] **D-21444**
Saito, N.
Convenient assay method for protease of the antarctic krill using paper disks [1978, jap] **B-20943**
Saito, T.
Measurement of the drift of auroral radar echoes with the radar auroragraph [1978, eng] **K-20183**
Sáiz, F.
Analysis of relationships among antarctic mesofauna and various climatic factors [1977, spa] **B-20910**
Musci taxocenosis of the Fildes Peninsula (King George Island, South Shetland Islands) [1977, spa] **B-20914**
Sakai, H.
Antarctic saline lakes—stable isotopic ratios, chemical compositions and evolution [1979, eng] **E-21126**
Sakamoto, J.
Riometer records of 30 MHz cosmic noise at Syowa Station, Antarctica in 1977 [1978, eng] **K-20998**
Sakasai, N.
Convenient assay method for protease of the antarctic krill using paper disks [1978, jap] **B-20943**
Sakaya, H.
Studies on proteases from antarctic krill [1977, jap] **B-19512**
Sakunov, G.G.
Methods and results of studying radiation properties of snow-firn covers [1977, rus] **I-20426**
Sakurai, H.
Construction of polar data-base system [1978, jap] **A-20830**
Salinas, M.G.
History, operation and performance of an experimental automatic weather station in Antarctica [1977, eng] **I-19362**
Operational meteorology, *Deep Freeze* 78 [1978, eng] **I-21614**
Salisbury, D.F.
Antarctica: geopolitical football [1977, eng] **M-20832**
Salstein, D.A.
Seasonal variability in the pole-to-pole modes of water vapor transport during the IGY [1978, eng] **I-21147**
Samorodnova, V.
Food for whales is food for the gods (krill, the antarctic shrimp) [1973, rus] **B-20612**
Samsel, G.L., Jr.
Limnology of select fresh water systems near the Antarctic Peninsula—field and laboratory studies [1971, eng] **B-19490**
Samushkin, V.A.
Collecting and processing hydrometeorological data in polar regions [1978, rus] **I-20613**
Sanak, J.
Accumulation of snow and radioactive debris in Antarctica: a possible refined radiochronology beyond reference levels [1977, eng] **F-20117**
Sancetta, C.
Cenozoic hiatuses in pelagic sediments [1978, eng] **J-21020**
Sanderson, T.J.O
Thermal stresses near the surface of a glacier [1978, eng] **F-20651**
Effect of climatic warming on the West Antarctic ice sheet [1979, eng] **F-21404**
Sandford, B.P.
Auroral research applied to radio communication [1966, ger] **K-19453**
Santa Cruz, F.Z.
Antarctic system and the utilization of resources [1978, eng] **M-21474**
Santiago de Chile. Instituto Antártico Chileno. Comité Nacional de Investigaciones Antárticas
National report to SCAR for 1976; Activities from 1974 to 1976; Programs for 1976-1977 [1976, spa] **A-19856**
Sarukhanian, E.I.
On the role of cosmogeophysical forces in polar hydrometeorological processes [1977, eng] **I-19787**
Polar experiment results and plans [1978, rus] **I-20611**
Main results of observations under the POLEX-South program in the Drake Passage (1975-76) and prospects for further Southern Ocean research [1978, rus] **J-20634**
Studying Southern Ocean circulation [1978, rus] **J-20635**
Horizontal circulation in the Drake Passage [1978, rus] **J-20636**
Results and prospects of Soviet research in the Southern Ocean [1978, rus] **J-20676**
Vertical structure of the Antarctic Circumpolar Current in the Drake Passage on the basis of field data [1978, rus] **J-21355**
Sasaki, S.
Auroral simulation experiments with a high power electron beam [1979, jap] **K-21677**
Sasaki, T.
Bacteriological investigation of the pollution at Syowa Station [1977, jap] **H-19303**
Riometer records of 30 MHz cosmic noise at Syowa Station Antarctica in 1976 [1977, eng] **K-19361**
Records of radio aurora at Syowa Station, Antarctica in 1976 [1978, eng] **K-20091**
Sastri, J.H.
Depressions in midlatitude F-region under relatively quiet geomagnetic conditions [1977, eng] **K-19803**
Sastry, J.S.
Hydrological characteristics and transequatorial transport in the west Indian Ocean [1976, eng] **J-20787**
Sato, K.
Distribution of terrestrial plant communities near Syowa Station in Antarctica, with special reference to water supply and soil properties [1977, jap] **B-19297**
Sato, T.
Flow-visualization by means of soap bubbles on snowdrift around the huts at Syowa Station [1978, jap] **F-20824**

Sato, T. *(cont.)*
Shear instability: auroral arc deformation and anomalous momentum transport [1978, eng] **K-20063**
Satomi, M.
Accumulation and ablation at Syowa Station [1978, eng] **F-19830**
Satow, K.
Distribution of 10 m snow temperatures in Mizuho Plateau [1978, eng] **F-19825**
Oxygen isotopic composition of the surface snow in Mizuho Plateau [1978, eng] **F-19838**
Stratigraphic analyses of firn and ice at Mizuho Station [1978, eng] **F-21299**
Compiled stratigraphic data from cores drilled at Mizuho Station [1978, eng] **F-21307**
Saunders, A.D.
Geochemistry of Mesozoic marginal basin floor igneous rocks from southern Chile [1979, eng] **E-21319**
Savatiugin, L.M.
Drilling through shelf ice near Novolazarevskaya Station [1978, rus] **F-20724**
Savchenko, V.G.
Soviet-American research aboard RV *Professor Zubov* [1977, eng] **J-19627**
Cyclonic eddy in the Antarctic Circumpolar Current south of Australia: results of Soviet-American observations aboard the R/V *Professor Zubov* [1978, eng] **J-20553**
Savich-Liubitskaia, L.I.
Leafy mosses of East Antarctica [1978, rus] **B-20429**
Savitskiĭ, G.B.
Features of development of atmospheric processes in the southern hemisphere in 1974 [1977, rus] **I-19883**
Features of aviation meteorology in Antarctica [1978, rus] **I-20742**
Using macrocirculation to produce experimental three-day weather and pressure field forecasts for Antarctica [1978, rus] **I-21455**
Tropospheric jet streams in Antarctica [1978, rus] **I-21456**
Sawyer, R.T.
New species of "tentacled" marine fish leech parasitic on *Notothenia* from the subantarctic Marion and Crozet Islands [1972, eng] **B-19310**
Sazhina, N.B.
Antarctic gravity anomaly map [1978, rus] **C-21702**
Schink, D.R.
Processes affecting the concentration of silica at the sediment-water interface of the Atlantic Ocean [1975, eng] **J-20506**
Processes affecting the concentration of silica at the sediment-water interface of the Atlantic Ocean [1974, eng] **J-20519**
Schlatter, R.P.
Feeding habits of the blue-eyed shag, *Phalacrocorax atriceps bransfieldensis* (Murphy) on Green Island, Antarctica [1976, spa] **B-21012**
Research on antarctic birds and mammals by Chilean workers in the Chilean Antarctic; its history, an overview and future plans [1977, spa] **B-21293**
Albinism in a Gentoo penguin [1977, spa] **B-21294**
Plan for disposal of small amounts of waste at temporary camps, shelters, and bases with small garrisons [1977, spa] **G-21295**
Schlichting, H.E., Jr.
Dispersal of algae and Protozoa by antarctic flying birds [1978, eng] **B-21590**
Schmidt, D.L.
In Madison: Antarctic reviewed [1977, eng] **A-19307**
Geology of the Saratoga Table quadrangle, Pensacola Mountains, Antarctica [1978, eng] **E-21257**
Geology of the Davis Valley quadrangle and part of the Cordiner Peaks quadrangle, Pensacola Mountains, Antarctica [1978, eng] **E-21258**
Schmidt, P.W.
Revised palaeomagnetic data for the Australian Mesozoic and a synthesis of late Palaeozoic-Mesozoic results for Gondwanaland [1977, eng] **L-20217**
Schneider, M.M.
First observations of gravity tides in the central part of Antarctica [1976, ger] **L-20683**
Influence of atmospheric pressure and air temperature fluctuations on tidal observations of gravity in Central Antarctica [1976, eng] **L-20684**
Measuring gravity relationship between Mirnyy and Vostok (Antarctica) [1976, ger] **L-20686**
Schneidermann, N.
Selective dissolution of Recent coccoliths in the Atlantic Ocean [1977, eng] **E-20568**
Schnek, A.G.
Penguin hemoglobin *(Aptenodytes forsteri)*. A 45 residue N-terminal sequence [1973, eng] **B-19394**
Schnell, R.C.
Naturally occurring biological ice nucleants: a review [1976, eng] **F-20306**
Schoeberl, M.R.
Stratospheric warmings: observations and theory [1978, eng] **I-21002**
Schoenhals, S.R.
LC-130R research flights, 1977-78 [1978, eng] **G-21642**
Scholander, P.F.
Positive tissue fluid pressure in the feet of antarctic birds [1978, eng] **B-21183**
Schopf, J.M.
An unusual osmundaceous specimen from Antarctica [1978, eng] **B-21396**
Coal forming elements in permineralized peat from Mountain Augusta (Queen Alexandra Range) [1977, eng] **E-19662**
Palynomorph preservation in the Beacon Supergroup of the Transantarctic Mountains [1977, eng] **E-19670**
Palynologic studies in the Transantarctic Mountains [1978, eng] **E-21510**
Schrader, G.
Soviet antarctic research with special consideration of medical and health problems [1977, ger] **H-20394**
Long-term oxygen consumption tests at constant physical activity on persons wintering over in the Antarctic [1978, ger] **H-21241**
Schreiber, B.C.
Authigenic gypsum in marine sediments [1978, eng] **E-20359**
Schreiber, W.
Analysis of krill, krill products and antarctic fish species [1977, ger] **B-20557**
Quality and tastiness of antarctic fish [1977, ger] **B-20971**
Research and exploration of the resources of krill and food fish in the Antarctic. Report on the 1975/76 Antarctic Expedition of the Federal Republic of Germany [1977, ger] **B-21118**
Processing and product development [1978, ger] **B-21451**
Processing of krill [1976, ger] **G-20967**
Mechanical processing of antarctic fish [1977, ger] **G-20970**
Schulte, G.
Evolution of the family Ameronothridae (Acari:Oribatei) 1. Morphological aspects [1977, eng] **B-19748**
Evolution of the family Ameronothridae (Acari: Oribatei) 2. Ecological aspects [1977, eng] **B-19749**
Schultz, G.A.
Nonasellote isopod crustaceans from Anvers Island and other antarctic locations [1978, eng] **B-20852**
Schulz, E.
Evaluation of krill meal as protein feed [1978, ger] **A-21253**
Schulz, K.J.
Correlation of clinopyroxene composition with environment of formation based on data from Ross Island volcanic rocks [1978, eng] **E-20375**
Schuster, R.O.
Tardigrada of New Zealand [1978, eng] **B-20549**
Schwalenberg, E.
Use of an X-band radar and satellite communications link for studies of air-sea interactions on the Antarctic Peninsula [1978, eng] **G-19757**
Schwerdtfeger, P.
Weather modification and environmental and ecological impact (caused by towed icebergs) [1978, eng] **F-20489**
Schwerdtfeger, W.
Temperature regime of the South Pole: results of 20 years' observations at Amundsen-Scott Station [1977, eng] **I-19694**
Cold, low-level jet stream in the Bransfield Strait: an example of inertial flow [1977, eng] **I-19705**
Early winter storms in the northwestern Weddell Sea [1978, eng] **I-21610**
Science news
Meteorite is cold, clean, carbonaceous [1978, eng] **E-20697**
Scientiae
Antarctic research ship [1978, afr] **J-20589**
Scientific Committee on Antarctic Research
[Reports of 12th SCAR meeting, Aug. 1972] [1972, eng] **A-19460**
Report of the SCAR executive meeting, Cambridge, UK, 6-7 July 1977 [1978, eng] **A-20326**
Documents of the 15th meeting [1978, eng] **A-20760**
Fifteenth meeting of SCAR, Chamonix, 16 to 26 May 1978 [1978, eng] **A-21155**

Biological Investigations of Marine Antarctic Systems and Stocks (BIOMASS). Vol. 1: Research proposals [1977, eng] **B-21659**
SCAR Working Group on Geology [1978, eng] **E-20796**
Joint meeting of the SCAR Working Groups on Geology and Solid Earth Geophysics, Madison, USA, 29 August 1977 [1978, eng] **E-20797**
Working Group on Human Biology and Medicine [1978, eng] **H-20325**
SCAR Working Group on Solid Earth Geophysics [1978, eng] **L-20795**

Sciremammano, F., Jr.
Observations of antarctic polar front motions in a deep water expression [1979, eng] **J-21227**

Sclater, F.R.
Distribution of dissolved copper in the Pacific [1977, eng] **J-19323**

Sclater, J.G.
Islas Orcadas cruise 11, Buenos Aires to Cape Town [1977, eng] **E-19634**
Tectonic structure and petrology of the antarctic plate boundary near the Bouvet triple junction [1978, eng] **E-19869**
Depositional history of the South Atlantic Ocean during the last 125 million years [1977, eng] **J-19321**
Bottom water flow through the Kane Gap, Sierra Leone Rise, Atlantic Ocean [1975, eng] **J-20508**
Heat flow in the Weddell Sea [1978, eng] **J-21572**

Scolaro, J.A.
New methodology for studying *Phocidae* (Pinnipedia) [1977, spa] **B-21432**

Scott, E.N.
Respiratory virus infection late in isolation at the South Pole [1978, eng] **H-21607**

Scott, L.V.
Respiratory virus infection late in isolation at the South Pole [1978, eng] **H-21607**

Scott, W.E.
Energy search turns to Antarctic [1978, eng] **E-21235**

Scourfield, M.W.J.
Aurorae and closed magnetic field lines [1977, eng] **K-19804**

Scripps Institution of Oceanography
Physical and chemical data. *Piquero* Expedition 16 December 1968-16 April 1969 [1974, eng] **J-20518**
Physical and chemical data from the Nemo Expedition in the Ross Sea aboard USCGC *Northwind* (ice breaker) 2-23 February 1972 [1974, eng] **J-20523**

Scully, R.T.
Marine living resources of the Southern Ocean [1978, eng] **B-21471**

Seager, J.R.
Redescription of the antarctic opisthobranch *Philine gibba* Strebel, 1908, from the type locality, South Georgia, South Atlantic [1978, eng] **B-21218**

Search
Uses of Antarctica [1977, eng] **A-20833**

Seaward, M.R.D.
Lichen-invertebrate associations [1977, eng] **B-21176**

Seely, N.T.
Initial results from a tracking receiver direction finder for whistler mode signals [1978, eng] **K-20502**

Segonzac, M.
Recent data on the fauna of Saint Paul and New Amsterdam Islands [1972, fre] **B-20894**

Seki, N.
Studies on proteases from antarctic krill [1977, jap] **B-19512**

Sekiyama, N.
Inactivation of enzymes and chemical change in antarctic krill as a result of boiling [1976, jap] **B-19447**

Selby, M.J.
Transverse erosional marks on ventifacts from Antarctica [1977, eng] **E-20179**

Semenov, V.F.
Penguins in Moscow [1977, rus] **B-19541**

Semenov, V.N.
Biogeographic aspects of the distribution and dynamics of water masses off the South American coast [1978, eng] **J-20933**

Semina, G.I.
Distribution of indicator species of planktonic algae in the world ocean [1978, eng] **B-20606**

Sen'ko, P.K.
Eighteenth Soviet Antarctic Expedition. Seasonal research 1972/73. General description [1978, rus] **A-20735**
Snow accumulation around Molodezhnaya Station [1978, rus] **F-20765**

Seppelt, R.D.
Studies on the bryoflora of Macquarie Island. II. *Ulota phyllantha* Brid [1978, eng] **B-20411**
Studies on the ecology of the vegetation at Mawson Station, Antarctica [1978, eng] **B-21323**

Seymour, G.E.
Relationship between cohesiveness and effectiveness in small isolated groups: a field study [1974, eng] **H-21072**

Shabanskiĭ, V.P.
Penetration of solar flare protons into the polar caps [1975, eng] **K-21161**

Shabica, V.S.
Reproductive biology of the brooding antarctic lamellibranch *Kidderia subquadratum* Pelseneer [1974, eng] **B-19284**

Shabtaie, S.
Dielectric permittivity of glacier ice measured *in situ* by radar wide-angle reflection [1978, eng] **F-21069**
Ross Ice Shelf Geophysical survey, 1977-1978 [1978, eng] **F-21538**

Shackleton, N.J.
Isochronous last-abundant-appearance datum (LAAD) of the diatom *Hemidiscus karstenii* in the sub-Antarctic [1978, eng] **E-19988**
Some results of the CLIMAP project [1978, eng] **I-21108**

Shaffer, N.R.
Regional distribution of Sr-87/Sr-86 ratios and mixing of sediments in the Ross Sea, Antarctica [1974, eng] **E-21484**

Shamont'ev, V.A.
Current status of arctic and antarctic research and prospects for further development [1978, rus] **A-20610**
Results of ice observations in Alasheyev Bight [1968, eng] **F-20336**
Exploration in the Alasheyev Bight [1968, eng] **G-20334**
Results of meteorological observations [1968, eng] **I-20342**
Changes in the hydrological characteristics of the Southern Ocean [1977, eng] **J-20025**
Brief description of the voyage of the *Ob'* and results of oceanographic work during the seventh Antarctic Expedition [1968, eng] **J-20328**
Tidal observations in the region of Molodezhnaya Station [1968, eng] **J-20335**
Characteristics of tidal phenomena in bays in the Schirmacher Ponds [1978, rus] **J-20721**

Sharbatian, A.A.
Evolution of the earth's cryosphere [1976, rus] **E-19972**

Shaughnessy, P.D.
Serum protein variation in southern fur seals, *Arctocephalus* spp., in relation to their taxonomy [1970, eng] **B-19411**
Giant-petrels in the South Atlantic: new data from Gough Island [1976, eng] **B-19899**
Notes on seabirds at Gough Island [1976, eng] **B-19900**

Shaw, G.E.
Properties of the background global aerosol and their effects on climate [1976, eng] **I-20699**
Particles in the air at the South Pole [1978, eng] **I-21621**
Polar aerosol-climatic implications [1976, eng] **I-21670**

Shaw, J.
Formation of the Labyrinth, Wright Valley, Antarctica [1977, eng] **E-20178**

Shcherbakov, A.V.
Numerical simulation of the baroclinic world ocean [1977, rus] **J-19369**

Shcherbich, L.V.
Natural mortality of *Notothenia rossi marmorata* [1975, rus] **B-21326**

Shearman, D.J.C.
Vitamin A and Sir Douglas Mawson [1978, eng] **H-20514**

Sheftel, V.M.
Phenomenon of sporadic E-layer conjugation [1976, eng] **K-21008**

Shel'piakov, B.A.
Results of seismic observations of dynamic glacier processes at Mirnyy [1978, rus] **F-20772**

Shepley, S.
Core recovery: USNS *Eltanin* and ARA *Islas Orcadas* [1977, eng] **E-19639**

Sheremt'ev, A.N.
Investigation of a subglacial lake near Molodezhnaya Station [1977, rus] **E-19796**

Shergold, J.H.
Late Cambrian Brachiopoda, Mollusca, and Trilobita from northern Victoria Land, Antarctica [1976, eng] **E-20142**

Shevchenko, IU.S.
Cerebral blood flow adaptation to high-altitude hypoxia in Antarctic workers [1978, rus] **H-21038**

Shevchenko, IU.S. *(cont.)*
Circadian rhythm in human blood circulation in Antarctica [1978, rus] **H-21039**
Motor system dynamics and adaptational features in wintering antarctic personnel [1977, rus] **H-21143**
Assessing thermoregulation in wintering personnel at a coastal antarctic station [1977, rus] **H-21144**
Effect of extreme antarctic conditions on the psychosomatic state of personnel [1977, rus] **H-21145**
Transmitting ECG's from Antarctica to Moscow by radio [1977, rus] **H-21146**
Reaction of human thermoregulatory system to local chilling at different periods of the antarctic winter [1978, rus] **H-21457**

Shevshchenko, IU.S.
Assessment of the possibility of satisfying the information requirement at an antarctic station [1977, rus] **H-19891**

Shiba, M.
Convenient assay method for protease of the antarctic krill using paper disks [1978, jap] **B-20943**

Shibayama, N.
Oceanographic data of the 17th Japanese Antarctic Research Expedition 1975-1976 [1977, eng] **J-19528**

Shifilov, F.D.
At the poles [1976, rus] **A-20607**

Shima, M.
Study on the extraterrestrial materials in Antarctica (VIII). On the distribution of the Yamato meteorites [1978, eng] **E-19922**
Mineralogical and petrographical studies of the Yamato meteorites, Yamato-7301(j), -7305(k), -7308(l) and -7303(m) from Antarctica [1978, eng] **E-19924**
Petrology of the Yamato meteorites (j), (k), (l), and (m) from Antarctica [1978, eng] **E-21125**

Shimaraev, V.N.
Results of aerogravimetric studies in Antarctica [1975, rus] **L-20382**

Shimasue, T.
Immortal *Soya*--antarctic research vessel [1978, jap] **G-19765**

Shimizu, H.
Vegetational distribution and habitats on West Ongul and Teöya Islands, Antarctica [1977, jap] **B-19299**
Outline of studies of the glaciological research program in Mizuho Plateau, East Antarctica, 1969-1975 [1978, eng] **F-19820**
Morphological feature of the ice sheet in Mizuho Plateau [1978, eng] **F-19821**
Flow line of the ice sheet over Mizuho Plateau [1978, eng] **F-19836**
Glaciological aspects and mass budget of the ice sheet in Mizuho Plateau [1978, eng] **F-19840**

Shinohara, T.
Meteorological observations at Showa in 1974 by the 15th Japanese Antarctic Research Expedition [1977, eng] **I-19526**

Shiraishi, K.
Geology and petrography of the northern Yamato Mountains, East Antarctica [1977, eng] **E-19311**
Antarctic geological map series. Sheet 17—Northern Yamato Mountains (1) Mt. Fukushima [1978, eng] **E-20302**

Shirke, J.S.
Origin of annual and subannual periodicities in F region ionization [1978, eng] **K-20530**

Shiro, I.
Records of radio aurora at Syowa Station, Antarctica in 1976 [1978, eng] **K-20091**

Shirochkov, A.V.
North-south asymmetry in the intensity of polar cap absorption [1977, eng] **K-20079**
Periodicity in Es occurrence probability at the polar caps [1977, rus] **K-20167**
Polar cap auroras analyzed by ionospheric forward scatter data [1977, rus] **K-21264**
Results and prospects of Soviet geophysical research in the Antarctic [1978, rus] **L-20675**

Shliakhov, V.I.
Results of several years of study of low-frequency radiation in the antarctic atmosphere [1978, rus] **K-21692**

Shmeleva, A.A.
New species of copepods of the genus *Calocalanus* from the Indian sector of the Antarctic and the South Atlantic [1978, eng] **B-21401**

Shoji, H.
X-ray diffraction topographic studies of Antarctic deep core ice [1978, eng] **F-20211**
Stress-strain tests of ice core drilled at Mizuho Station, East Antarctica [1978, eng] **F-21303**
Mechanical tests of Antarctic deep core ice under hydrostatic pressure—Instrumentation and preliminary results [1979, jap] **F-21491**

Shtefan, B.
Pterylography of penguins [1977, rus] **B-19535**

Shteĭnbok, D.B.
Feasibility of using satellite cloud-cover data to refine H-500 field analysis in the Southern Hemisphere [1975, rus] **I-20545**

Shumilov, I.A.
Propagation of shortwave time signals over long-distance radio links [1977, rus] **G-19893**
Vertical ionospheric soundings at Molodezhnaya Station [1977, rus] **K-19889**
Relationship between ionospheric radiowave absorption and magnetic disturbances in Antarctica [1978, rus] **K-21459**

Shumskiĭ, P.A.
Evolution of the earth's cryosphere [1976, rus] **E-19972**
Thermodynamic model of an external ice shelf [1976, ger] **F-19795**
Dynamic glaciology [1978, eng] **F-19905**

Shurygin, D.IA.
Functional hormonal activity of the adrenals and sympathetic adrenal system during antarctic acclimatization [1978, rus] **H-21037**

Shust, K.V.
Visual observations on antarctic krill made on board the factory research ship *Akademik Knipovich* [1970, eng] **B-20386**

Shuvalov, V.S.
Geographical variability of some species of the family Oithonidae (Copepoda, Cyclopoida) [1975, eng] **B-20670**

Sidorov, D.V.
Catalog of gravity stations in Antarctica (Explanatory notes and charts) [1973, eng] **L-21089**

Sidorov, V.A.
Organization of the new Soviet station Molodezhnaya [1968, eng] **G-20343**

Sidorova, E.M.
Amino acid content of krill and krill meal [1970, rus] **B-20819**

Siebert, G.
Utilization of krill shells in feeding experiments with rats [1978, ger] **B-20560**

Siegel, F.R.
Mineralogy and major element chemistry of suspended sediments from the Chilean archipelago: R/V *Hero* cruise 76-4 [1977, eng] **E-19642**
Geochemistry of the fine size fraction of bottom sediments from the southern Argentine shelf [1978, eng] **E-21577**
Suspended particulate matter on the southern Argentine shelf [1979, eng] **J-21115**

Siegel, H.J.
Core splitter for Argentine-U.S. coring program [1978, eng] **E-21640**

Sievers, H.A.
Variability of the antarctic polar frontal zone in the Drake Passage—summer 1976-1977 [1978, eng] **J-20532**
FDRAKE 77 *Yelcho* [1978, eng] **J-21549**

Sil'ianova, Z.S.
Fecundity of *Notothenia rossi marmorata* and its relation to fat content [1972, rus] **B-20574**

Silkin, B.I.
Antarctica today; results of ten years of research [1967, ger] **A-19435**

Simmons, G.M., Jr.
Ecosystem comparisons of oasis lakes and soils [1978, eng] **B-21605**

Simmons, J.C.
Cool California penguins [1979, eng] **B-21261**

Simon, D.
Influence of atmospheric pressure and air temperature fluctuations on tidal observations of gravity in Central Antarctica [1976, eng] **L-20684**

Simonov, I.M.
Physical-geographic description of the Fildes Peninsula (South Shetland Islands) [1977, eng] **E-19372**

Simonov, V.
Discoverer of Antarctica (in observance of T.T. Bellingshausen's 200th birthday) [1978, rus] **A-21651**

Simpson, G.G.
Early mammals in South America: fact, controversy, and mystery [1978, eng] **B-20918**

Simpson, J.
Iceberg utilization: comparison with cloud seeding and potential weather impacts [1978, eng] **F-20484**

Simpson, R.D.
Reproduction of some littoral molluscs from Macquarie Island (Subantarctic) [1977, eng] **B-19853**
Siniff, D.
Biota of the antarctic pack ice: R/V *Hero* cruise 77-5 [1978, eng] **B-21600**
Siniff, D.B.
Biota of the antarctic pack ice: R/V *Hero* cruise 76-6 [1977, eng] **B-19598**
Analysis of the dynamics of a Weddell seal population [1977, eng] **B-19751**
Problems in the conservation of polar marine mammals [1978, eng] **B-20205**
Siogas, L.
Spectroscopic studies at McMurdo, South Pole, and Siple stations during the austral summer 1977-78 [1978, eng] **I-21611**
Siren, J.C.
Precipitating electrons observed from balloons launched near the conjugate point of Siple Station, Antarctica [1978, eng] **K-21624**
Sivak, J.G.
Corneal curvature and amphibious vision in penguins [1978, eng] **B-21592**
Skewes, M.A.
Orogenic volcanism in Southern Chile [1976, sp] **E-21331**
Skira, I.J.
Reproduction of the rabbit, *Oryctolagus cuniculus* (L.), on Macquarie Island, Subantarctic [1978, eng] **B-21322**
Skou, N.
New 60-megahertz antenna array for radio echo sounding [1978, eng] **G-21643**
Sladen, W.J.L.
Growth of Emperor penguin chicks at Cape Crozier, Ross Island, Antarctica [1972, eng] **B-21056**
Slemenson, M.
Philately: Japan and JARE [1975, spa] **A-20265**
Slepokurov, V.A.
Natural mortality of *Notothenia rossi marmorata* [1975, rus] **B-21326**
Slichter, L.B.
Search at South Pole for the pendulum mode of the earth's inner core [1977, eng] **L-19673**
Sliter, W.V.
Cretaceous *Islas Orcadas* core from the Falkland (Malvinas) Plateau, southwest Atlantic [1977, eng] **E-19635**
Paleoenvironmental analysis and correlation of a Cretaceous *Islas Orcadas* core from the Falkland Plateau, Southwest Atlantic [1977, eng] **E-20137**
Smiddy, M.
Polar cap electric field structures with a northward interplanetary magnetic field [1979, eng] **K-21321**
Smiley, V.N.
Lidar and replication studies of ice crystal precipitation at the South Pole [1977, eng] **I-19701**
Lidar and replicator measurements of ice crystal precipitation at South Pole [1976, eng] **I-21671**
Smirnov, N.P.
On the role of cosmogeophysical forces in polar hydrometeorological processes [1977, eng] **I-19787**
Polar experiment results and plans [1978, rus] **I-20611**
Polar Experiment South-76 [1978, rus] **I-20633**
Antarctic polar front in the Drake Passage [1978, rus] **I-20638**
Free-atmosphere energy characteristics over the Drake Passage in the summer of 1976 [1978, rus] **I-20644**
Main results of observations under the POLEX-South program in the Drake Passage (1975-76) and prospects for further Southern Ocean research [1978, rus] **J-20634**
Studying Southern Ocean circulation [1978, rus] **J-20635**
Horizontal circulation in the Drake Passage [1978, rus] **J-20636**
Current measurement by means of buoys in the Drake Passage [1978, rus] **J-20637**
Drake Passage water masses in the summer [1978, rus] **J-20640**
Thermal structure of antarctic continental slope waters around Molodezhnaya Station [1978, rus] **J-20649**
Results and prospects of Soviet research in the Southern Ocean [1978, rus] **J-20676**
Vertical structure of the Antarctic Circumpolar Current in the Drake Passage on the basis of field data [1978, rus] **J-21355**
Smirnov, V.M.
Zonal mean characteristics of wind speed in the southern hemisphere [1978, rus] **I-20647**
Smirnov, V.S.
Dependence of the north-south anisotropy of cosmic rays on the orientation of interplanetary shock waves [1975, eng] **K-21165**
Smith, A.
Looking into the health of the antarctic icecap [1977, eng] **A-19752**
Smith, A.J.
Very low frequency electromagnetic phenomena: whistlers and micropulsations [1977, eng] **K-20282**
Smith, M.C.
Searching on-line data bases for the *Antarctic Bibliography* [1978, eng] **A-21637**
Smith, N.R.
Combined effects of wind stress and topography in a two-layer model of the Southern Ocean [1978, eng] **J-20162**
Smith, R.A.
Iceberg cleaving and fracture mechanics - a preliminary survey [1978, eng] **F-20460**
Smith, V.R.
Animal-plant-soil nutrient relationships on Marion Island (Subantarctic) [1978, eng] **B-20165**
Soil chemistry of Marion Island (Subantarctic) [1978, eng] **E-20412**
Smithers, C.N.
Philotarsidae (Psocoptera) of New Zealand and islands of the New Zealand Plateau [1977, eng] **B-19268**
Smurov, S.V.
Design recommendations for insulated clothing for members of Soviet antarctic expeditions [1978, rus] **G-21045**
Sobotovich, E.V.
Early Azoic age of the earth's oldest rocks (based on results of lead-isotope studies of crystalline mountain rocks from the Antarctic platform) [1976, rus] **E-19791**
Soden, D.L.
Political and legal analysis: the Antarctic Treaty [1978, eng] **M-20151**
Sokolov, S.T.
Katabatic wind in the Molodezhnaya Station area and forecasting it [1978, rus] **I-20764**
Sokolova, A.G.
Assimilation by the organism of aminoacids of the protein product paste "Ocean" [1974, rus] **H-20866**
Sokolova, M.N.
Large-scale division of the ocean according to trophic structure of deep-sea macrobenthos [1976, rus] **J-20230**
Sollie, F.
Legal status of the Antarctic [1976, eng] **M-20189**
Trends and prospects for regimes for living and mineral resources in the Antarctic [1979, eng] **M-21369**
Solomon, S.C.
Microseismicity near the Indian Ocean triple junction [1977, eng] **L-19910**
Solov'ev, D.S.
Geological structure of Mac. Robertson Land (East Antarctica) [1978, rus] **E-20600**
Petrographic character of moraine deposits in Prince Charles Mountains (Mac.Robertson Land) [1978, rus] **E-20720**
Solov'ev, I.A.
Discovery of first Middle Cambrian trilobites in the Shackleton Range [1978, rus] **E-21701**
Somerville, D.A.
Access hole drilling through the Ross Ice Shelf [1978, eng] **F-21536**
Somme, L.
Observations on the snow petrel *(Pagodroma nivea)* in Vestfjella, Dronning Maud Land [1977, eng] **B-19777**
Prostigmate mites (Acari, Prostigmata) from Sverdrupfjella, Dronning Maud Land, with description of four new species [1977, eng] **B-21229**
Cold-hardiness of *Cryptopygus antarcticus* (Collembola) from Bouvetöya [1978, eng] **B-21243**
Cold tolerance of two antarctic terrestrial arthropods [1978, eng] **B-21244**
Somov, M.M.
On the earth's domes [1978, rus] **A-20609**
Sorokina, E.L.
Preparing vitamin A from *Notothenia marmorata* liver by an improved method of alkaline hydrolysis [1972, rus] **A-20808**
Soroko, S.I.
Variations in frequency spectra on EEG's of antarctic workers [1978, rus] **H-20730**
Description of human acclimatization in the Antarctic using psychological and physiological study results [1978, rus] **H-21035**

Soto, E.G.
Antarctic clothing [1976, eng] **G-20494**
South Africa. Weather Bureau
News from the islands, Antarctica and SANAE [1977, eng] **A-19485**
Climate data for Norway Station and SANAE in the Antarctic for the years 1960 to 1965 [1965, eng] **I-20424**
South African journal of science
More about krill [1978, eng] **B-20716**
Ecology of a subantarctic island: 15 years on [1978, eng] **B-21318**
South African shipping news and fishing industry review
Krill—an immense but vulnerable source of protein [1971, eng] **A-20058**
Sovetskaia antarkticheskaia ekspeditsiia
Eighteenth Soviet Antarctic Expedition. Seasonal research 1972/73. General description [1978, rus] **A-20735**
Eighteenth Soviet Antarctic Expedition. Winter research 1972-1974 [1978, rus] **A-20761**
Fifteenth Soviet Antarctic Expedition. Description and scientific results. Winter research 1969-1971 [1977, rus] **A-21134**
Nineteenth Soviet Antarctic Expedition. Winter research 1973-75 [1978, rus] **A-21453**
Space science instrumentation
Observations carried out in the field at Kerguelen Station during the ARAKS experiment [1978, eng] **K-21426**
Spall, H.
Polarity zonations, magnetic intensities, and the correlation of Miocene and Pliocene DVDP cores, Taylor Valley, Antarctica [1978, eng] **L-20364**
Spangler, C.E., Jr.
Metallographic properties of Yamato iron meteorite, Yamato-75031, and stony-iron meteorite, Yamato-74044 [1978, eng] **E-19936**
Spellerberg, I.F.
Capturing and immobilizing McCormick skuas [1969, eng] **B-19413**
Spencer, K.A.
Revision of the New Zealand Chloropidae [1977, eng] **B-19814**
Speziale, B.J.
Dispersal of algae and Protozoa by antarctic flying birds [1978, eng] **B-21590**
Spichkin, V.A.
Characteristics of tidal phenomena in bays in the Schirmacher Ponds [1978, rus] **J-20721**
Spiedo, H.
Primary production in antarctic waters [1977, eng] **J-20039**
Spillane, M.
Effect of meridional circulation in large scale current topography interactions [1977, eng] **J-19630**
Splettstoesser, J.
Stable isotope variations in snow and ice at Vostok, Antarctica [1977, eng] **F-20121**
Splettstoesser, J.F.
Polar studies [1977, eng] **A-19481**
Mining in Antarctica: survey of mineral resources and possible exploitation methods [1976, eng] **A-19737**
Offshore development for oil and gas in Antarctica [1978, eng] **A-19756**
Polar research [1978, eng] **A-20284**
Spörli, K.B.
Plutonic rocks from the Ruppert Coast, West Antarctica [1978, eng] **E-21500**
Spracklen, C.T.
Radio wave Doppler studies of the antarctic ionosphere [1977, eng] **K-19478**
Spurr, E.B.
Diurnal activity of Adelie penguins *Pygoscelis adeliae* at Cape Bird [1978, eng] **B-20016**
St. Lawrence, W.
Creep rupture at depth in a cold ice sheet [1978, eng] **F-20981**
Stäblein, G.
Traditions and current tasks of polar research [1978, ger] **A-20887**
Stackpole, E.A.
Whales and destiny: the rivalry between America, France, and Britain for control of the Southern Whale Fishery, 1785-1825 [1972, eng] **A-20693**
Stadler, T.
Parasitology, the key to a problem [1975, spa] **B-20262**
Standtmann, R.W.
Terrestrial arthropods, Marie Byrd Land, Antarctica [1978, eng] **B-21604**
Stanford, J.L.
Systematic deviations of Nimbus-5 atmospheric temperature fields from radiosonde data over the winter Antarctic [1977, eng] **I-19459**
On the nature of persistent stratospheric clouds in the Antarctic [1977, eng] **I-19816**
Stanley, A.
Wilkes Expedition [1971, eng] **D-20019**
Stanley, H.R.
Ice sheet topography by satellite altimetry [1978, eng] **F-20414**
Stanley, K.O.
Stratigraphy and sedimentary petrology of the Fremouw Formation (Lower Triassic), Cumulus Hills, central Transantarctic Mountains [1978, eng] **E-21513**
Stanton, D.
Distribution of displaced antarctic diatoms in the Argentine Basin [1978, eng] **B-20843**
Stauffer, B.
Geochemical and isotope studies, Ross Ice Shelf Project [1977, eng] **F-19688**
Extraction of gases and dissolved and particulate matter from ice in deep boreholes [1977, eng] **F-20123**
Stavropoulos, C.C.
Satellite-tracked drifters between Africa and Antarctica [1978, eng] **J-19812**
Stefansson, K.M.
Enrichment of volatile elements in the atmosphere by volcanic activity: Augustine volcano 1976 [1978, eng] **I-21050**
Stein, M.
Krill and hydrographic conditions off the Antarctic Peninsula [1978, eng] **B-21348**
Temperature and profiling current meter measurements in the central Scotia Sea [1978, eng] **J-21343**
Oceanographic investigations [1978, ger] **J-21445**
Stein, S.
Seismicity and tectonics of the Ninetyeast Ridge area: evidence for internal deformation of the Indian plate [1978, eng] **L-20861**
Steinberg, R.
Fishing gear techniques [1978, ger] **A-21449**
Antarctic krill—food for the future [1975, ger] **B-20290**
Research and exploration of the resources of krill and food fish in the Antarctic. Report on the 1975/76 Antarctic Expedition of the Federal Republic of Germany [1977, ger] **B-21118**
Stepanov, V.N.
Salinity field and its transformation in deep ocean waters [1977, rus] **J-19589**
Diagnostic calculations of world ocean horizontal circulation [1977, rus] **J-20445**
Water density field of the world ocean [1978, eng] **J-20605**
Stern, C.
Deformation, serpentinization and emplacement of a dunite complex, Gibbs Island, South Shetland Islands: possible fracture zone tectonics [1977, eng] **E-19322**
Metamorphic petrology of the Sarmiento ophiolite complex, Chile [1978, eng] **E-21287**
Igneous and metamorphic processes associated with the formation of Chilean ophiolites and their implication for ocean floor metamorphism, seismic layering, and magnetism [1976, eng] **E-21330**
Orogenic volcanism in Southern Chile [1976, sp] **E-21331**
Pillow talk [1978, eng] **E-21334**
Stern, C.R.
Geochemistry of Mesozoic marginal basin floor igneous rocks from southern Chile [1979, eng] **E-21319**
Model for ocean-floor metamorphism, seismic layering and magnetism [1976, eng] **E-21328**
Field and geochemical data bearing on the development of a Mesozoic volcano-tectonic rift zone and back-arc basin in southernmost South America [1978, eng] **E-21333**
Stevens, G.R.
Mesozoic biogeography of the South-West Pacific and its relationship to plate tectonics [1977, eng] **E-20601**
Steyaert, J.
Eucampia balaustium n. sp. Castr. and *Mölleria antarctica* n. sp. Castr. Taxonomy and nomenclature [1975, eng] **B-19309**
Stirling, I.
Biota of the antarctic pack ice: R/V *Hero* cruise 76-6 [1977, eng] **B-19598**
Problems in the conservation of polar marine mammals [1978, eng] **B-20205**

Regulation of numbers of an apparently isolated population of Weddell seals *(Leptonychotes weddelli)* [1972, eng] **B-20893**

Stockwell, D.
Biogeography and metabolism of phytoplankton and zooplankton in the Ross Sea, Antarctica [1978, eng] **B-21580**

Stolfi, R.
Ice moving in sea water [1978, eng] **F-20461**

Stone, P.
Raised marine and glacial features of the Cooper Bay-Wirik Bay area, South Georgia [1976, eng] **E-19559**

Stonehouse, B.
General biology and thermal balance of penguins [1967, eng] **B-20401**

Strakhov, N.M.
Two patterns of modern global lithogenesis and their methodology [1978, eng] **E-20902**

Strandtmann, R.W.
Redescription of *Nanorchestes bifurcatus* (Acarina: Prostigmata: Nanorchestidae) [1978, eng] **B-21179**
Prostigmate mites (Acari, Prostigmata) from Sverdrupfjella, Dronning Maud Land, with description of four new species [1977, eng] **B-21229**
Three Adélie penguin colonies on the Hobbs coast, and a nesting site of the snow petrel, Marie Byrd Land, Antarctica [1978, eng] **B-21593**

Strange, I.
Wildlife in the Falklands [1972, eng] **B-19446**

Streten, N.A.
Seasonal climatic variability over the southern oceans [1977, eng] **I-20076**

Stroev, P.A.
Catalog of gravity stations in Antarctica (Explanatory notes and charts) [1973, eng] **L-21089**

Stroschein, L.A.
Radiation budget at Plateau Station, Antarctica, 1966-1967 [1977, eng] **I-19337**

Stuckless, J.S.
Trace elements in volcanic rocks of Ross Island and vicinity, Antarctica, amd implications for the origin of alkali-basalt magma [1978, eng] **E-20365**
Significance of gamma-ray, salinity and electrical logs in DVDP boreholes [1978, eng] **E-20371**
Petrochemical model for the genesis of the volcanic rocks from Ross Island and vicinity, Antarctica [1978, eng] **E-20373**
Correlation of clinopyroxene composition with environment of formation based on data from Ross Island volcanic rocks [1978, eng] **E-20375**
Ages for the vida granite and olympus granite gneiss, Victoria Valley, southern Victoria Land [1978, eng] **E-21508**

Stuiver, M.
Marine microfossils on the McMurdo Ice Shelf [1977, eng] **E-19644**
Fresh-water diatoms from perched deltas in Taylor Valley, Antarctica [1978, eng] **E-21517**
Glacial geologic studies in the McMurdo Sound region [1978, eng] **E-21528**
Glacier history of the McMurdo Sound region [1977, eng] **F-19676**
Ageing and circulation of West Atlantic Deep Water [1977, eng] **J-20080**

Stump, E.
Metamorphic basement rocks, central Transantarctic Mountains [1977, eng] **E-19652**
New occurrences of dish structure in the stratigraphic record [1977, eng] **E-20015**
Geological investigations in the Leverett Glacier area [1978, eng] **E-21498**

Suárez, M.
Structural observations in the Darwin Mountains, Antarctica and Tierra del Fuego: 77-4 Cruise of the r/v *Hero* [1977, spa] **E-21335**

Suetova, I.A.
Glacial mass balance of Antarctica [1965, rus] **F-20052**

Sugden, D.E.
Scenery of the south: Falkland Islands, South Georgia, Subantarctic islands [1975, eng] **A-19370**
Coastal geomorphology of high latitudes [1975, eng] **E-20692**

Sukhoivanenko, P.IA.
High sensitivity optical equipment for detection of weak luminous objects [1978, eng] **K-21422**

Sullivan, E.
Krill rush: tiny fish puts Antarctica up for grabs [1978, eng] **A-19866**

Sullivan, L.
Recent sedimentation in the southeast Indian Ocean with special reference to the effects of Antarctic Bottom Water circulation [1978, eng] **J-19992**

Sun, C.-T.
Effects of various dehydration treatments on the protein quality of antarctic krill powder [1978, chi] **B-21249**

Sun, S.H.
Identification of some fungi from soil and air of Antarctica [1978, eng] **B-21352**

Sunada, S.
Preface [1978, jap] **A-19760**

Supko, P.R.
General synthesis of Central and South Atlantic drilling results, Leg 39, Deep Sea Drilling Project [1977, eng] **E-19851**

Supp, H.L.
Radio scintillation studies [1977, eng] **K-19723**

Sushkova, N.K.
Krill meal as poultry feed [1976, rus] **B-19994**

Sutcliffe, P.R.
Note on the daily variation of the geomagnetic vertical intensity at Marion Island [1976, eng] **K-19904**
Geomagnetic L-variation at SANAE, Antarctica [1978, eng] **L-21342**

Sutter, J.F.
K/Ar age determinations on DVDP 1 and 2 core samples [1978, eng] **E-20369**

Sutton, J.
Antarctica, a key to the understanding of the evolution of Gondwanaland [1977, eng] **E-20280**

Suwa, K.
Geology of the Dufek intrusion in Antarctica [1975, jap] **E-20050**

Suziumova, G.N.
Basic features of Antarctic climate and weather [1977, rus] **I-19567**

Suzuki, A.
Geomagnetic Sq field at successive universal times [1978, eng] **K-20235**

Suzuki, M.
Notes on some fishes associated with the antarctic krill. 1. *Neopagetopsis ionah* Nybelin [1978, eng] **B-20825**

Suzuki, T.
Development of concentrated protein food material from antarctic krill [1977, eng] **B-21232**
Bacteriological investigation of the pollution at Syowa Station [1977, jap] **H-19303**
Meteorological observations at Showa in 1974 by the 15th Japanese Antarctic Research Expedition [1977, eng] **I-19526**

Suzuki, Y.
Ice-coring project at Mizuho Station, East Antarctica, 1970-1975 [1978, eng] **F-21297**
Outline of the drilling operation at Mizuho Station [1978, eng] **F-21298**
Auroral infrasonic waves and the auroral electrojet [1979, eng] **K-21283**

Svalgaard, L.
Comparison of inferred and observed interplanetary magnetic field polarities, 1970-1972 [1975, eng] **K-21071**

Sviatlovskiĭ, A.E.
Regional volcanology [1975, rus] **E-19420**

Swafford, J.R.
Taxonomy of antarctic bacteria from soils and air primarily of the McMurdo Station and Victoria Land dry valleys region [1978, eng] **B-20901**

Swinnerton, J.W.
Atmospheric trace gases in the southern hemisphere [1973, eng] **I-19484**

Swinton, W.E.
Physicians as explorers. Joseph Hooker: botanical journeys in Antarctica and India [1977, eng] **A-20196**
Physicians as explorers. Edward Wilson: Scott's final antarctic companion [1977, eng] **A-21030**

Swithinbank, C.
Glaciological research in the Antarctic Peninsula [1977, eng] **F-19477**
Remote sensing of iceberg thickness [1978, eng] **F-20455**

Swyers, H.M.
Public works, *Deep Freeze* '77 [1977, eng] **G-19732**

Sykes, L.R.
Intraplate seismicity, reactivation of preexisting zones of weakness, alkaline magmatism, and other tectonism postdating continental fragmentation [1978, eng] **E-21003**

Sylvain, M.
F-lacuna events in Terre-Adelie and their relationship with the state of the ionosphere [1978, eng] **K-20629**

Symposium on Andean and Antarctic volcanology problems, Santiago, Chile, Sep. 1974
Proceedings [1976, eng] **E-20144**

Syms, M.C.
Geomagnetic field in New Zealand in 1975 [1978, eng] **K-20528**

Sytinskiĭ, A.D.
Results of seismic observations of dynamic glacier processes at Mirnyy [1978, rus] **F-20772**
On hydrometeorological conditions of microseisms generation [1973, eng] **L-19572**

Sytov, A.B.
Effect of composition and characteristics of separate components of saliva on the oral cavity in Mirnyy Station wintering personnel [1977, rus] **H-19894**
Clinical features of stomatological disease in antarctic personnel [1978, rus] **H-21044**

Szádeczky-Kardoss, G.
Proceedings of the 7th International Symposium on Earth Tides [1976, eng] **L-20682**

Szwarc, V.S.
Geophysical monitoring for climatic change at the South Pole [1977, eng] **I-19695**

Tabaldiev, S.R.
Low energy electron spectrometer *SERBE* [1978, eng] **K-21416**

Tabler, R.D.
Visibility in blowing snow and applications in traffic operations [1978, eng] **F-21715**

Taguchi, S.
Phytoplankton studies in the water column and in the pack ice of the Weddell Sea [1977, eng] **B-19616**
Primary productivity in sea ice of the Weddell region [1978, eng] **B-20937**
Sea ice and ice algae relationships in the Weddell Sea [1978, eng] **F-21544**

Takagi, S.
Members of the 1st JARE—samurai [1978, jap] **D-19767**

Takaoka, N.
Rare gas studies of Yamato-7301(j), -7304(m) and -7305(k) [1978, eng] **E-19929**

Takeda, H.
Classification for the Yamato-74 chondrites based on the chemical compositions of their olivines and pyroxenes [1978, eng] **E-19923**
Preliminary mineralogical examination of the Yamato-74 achondrites [1978, eng] **E-19927**
Yamato achondrite polymict breccias [1978, eng] **E-19928**
Inverted pigeonites from lunar breccia 76255 and pyroxene-crystallization trends in lunar and achondritic crusts [1977, eng] **E-20066**
Characterization of crust formation on a parent body of achondrites and the moon by pyroxene crystallography and chemistry [1976, eng] **E-20228**

Takeshita, T.
Science Council of Japan and the JARE [1978, jap] **G-19771**

Takeuchi, H.
Rocket measurements of auroral-zone energetic electrons at Syowa Station, Antarctica. I. Characteristics of electrons under no geomagnetic disturbance [1978, eng] **K-20949**
Observations of auroral-zone precipitating electrons by antarctic rockets [1979, jap] **K-21676**
Data processing for auroral electron analysis [1979, jap] **K-21678**

Takizawa, T.
Outline of the drilling operation at Mizuho Station [1978, eng] **F-21298**

Taljaard, J.J.
Surface temperature and sea-level pressure at Norway Station and Sanae [1976, eng] **I-19901**
Climate of the upper air: Southern Hemisphere. Vol.3. Vector mean geostrophic winds: isogon and isotach analyses [1971, eng] **I-20140**

Tanaka, T.
REE, Ba, Sr and Rb in the Yamato meteorites, with special reference to Yamato-691(a), -692(b) and -693(c) [1978, eng] **E-19933**

Tanaka, Y.
Activities of Japanese party in McMurdo Sound area 1976-77 [1977, eng] **A-19529**
Observing plan of wave normal direction of auroral VLF emissions on board a rocket at Syowa Station [1978, eng] **K-20955**

Tarakanova, V.P.
Efficiency of the existing network of southern hemisphere polar aerological data-gathering stations and feasibility of improving it [1977, rus] **I-21268**

Tarasova, T.M.
High sensitivity optical equipment for detection of weak luminous objects [1978, eng] **K-21422**

Tarcsai, G.
Methods of whistler analysis. Pt.2. Application to whistlers observed on the ground [1977, fre] **K-20840**

Tarling, D.H.
Geological-geophysical framework of ice ages [1978, eng] **I-21187**

Tarney, J.
Geochemistry of Mesozoic marginal basin floor igneous rocks from southern Chile [1979, eng] **E-21319**
Marginal basin "rocas verdes" complex from S. Chile: a model for Archaean greenstone belt formation [1976, eng] **E-21332**

Tarutin, O.A.
Petrographic character of moraine deposits in Prince Charles Mountains (Mac.Robertson Land) [1978, rus] **E-20720**

Tarverdieva, M.I.
Feeding of fishes of the families Nototheniidae and Chaenichthyidae in the South Orkney Islands [1978, eng] **B-21400**

Tasch, P.
Intercontinental correlation by conchostracans and palynomorphs from Antarctica, western Australia, India, and Africa [1977, eng] **E-19669**
Permian palynomorphs (Coalsack Bluff, Mt. Sirius, Mt. Picciotto) and other studies [1978, eng] **E-21511**

Tashpulatov, R.IU.
Peripheral blood indicators in wintering 15th SAE personnel at Vostok [1977, rus] **H-21141**
Identification and biological characteristics of strains of psychrophilic bacteria isolated in diarrhea of polar workers and from antarctic lake water [1978, eng] **H-21427**
Effect of extreme antarctic conditions on blood serum protein composition in polar workers [1978, rus] **H-21435**
Human immunology under antarctic conditions [1978, rus] **H-21708**

Taylor, A.J.W.
Summary of psychological effects of antarctic service [1978, eng] **H-20876**

Taylor, A.M.
Peridot on Ross Island—Antarctica [1974, eng] **E-20593**

Taylor, E.B.
Strategic importance of the polar regions to the United States [1973, eng] **A-21210**

Taylor, H.W.
Antarctic oceanographic zonation [1977, eng] **J-20024**
Climatic characteristics of the Antarctic Polar Front Zone [1978, eng] **J-20707**

Taylor, M.E.
Distributional model for marine isopod crustaceans and its bearing on early Paleozoic paleozoogeography and continental drift [1979, eng] **B-21394**

Taylor, M.S.
Focus on the Falkland Islands [1971, eng] **A-19483**

Tchernia, P.
Study of the east-west antarctic current by means of icebergs tracked by the EOLE satellite [1977, eng] **J-20026**

Tedman, R.A.
Cow-pup behaviour of the Weddell seal, *Leptonychotes weddelli* (Pinnipedia), in McMurdo Sound, Antarctica [1979, eng] **B-21442**

Teĭs, R.V.
Some features of formation of oxygen isotopic composition in East Antarctic snow cover [1978, rus] **F-21486**

Tejlgaard, J.
New 60-megahertz antenna array for radio echo sounding [1978, eng] **G-21643**

Tenorio, J.M.
Catalog of entomological types in the Bishop Museum [1978, eng] **B-20995**

Terasawa, T.
Acceleration mechanism of auroral particles: a review [1979, jap] **K-21674**

Terent'ev, A.V.
AKP unit for producing protein paste from krill [1972, rus] **A-19847**

Tewksbury, D.A.
Volcanoes in the Hobbs Coast and Ruppert Coast sectors of Marie Byrd Land [1978, eng] **E-21521**

Theile, K.
Possibilities of internationalization of Antarctica [1977, ger] **M-20288**

Therezien, Y.
Freshwater algae from Crozet and Kerguelen Islands (excluding diatoms). 2. Examination of specimens taken in 1973 and 1974 [1977, fre] **B-20930**

Thiede, J.
Depositional history of the South Atlantic Ocean during the last 125 million years [1977, eng] **J-19321**

Thimas, J.
Colonial behavior of antarctic marine mammals in eastern McMurdo Sound [1977, eng] **B-19597**
Thom, B.G.
Termination of last interglacial episode and the Wilson Antarctic surge hypothesis [1978, eng] **E-20008**
Thom, G.
Disruption of bedrock by the growth and collapse of ice lenses [1978, eng] **E-21338**
Thomas, I.L.
Spherical harmonic analysis of the austral auroral oval [1978, eng] **K-20390**
Thomas, J.
Colonial behavior of the Weddell seal in eastern McMurdo Sound [1978, eng] **B-21599**
Thomas, R.H.
Glaciological measurements on the Ross Ice Shelf [1977, eng] **F-19687**
Model for Holocene retreat of the West Antarctic Ice Sheet [1978, eng] **F-20857**
Equilibrium state of the eastern half of the Ross Ice Shelf [1978, eng] **F-21336**
Effect of climatic warming on the West Antarctic ice sheet [1979, eng] **F-21404**
Glaciological measurements on the Ross Ice Shelf [1978, eng] **F-21537**
Thompson, E.M.
Microparticle analysis of the 101-meter South Pole ice core [1977, eng] **F-19681**
Thompson, J.C., Jr.
Systematics and ecology of ciliated protozoa from King George Island, South Shetland Islands [1978, eng] **B-21149**
Thompson, L.G.
Microparticle analysis of the 101-meter South Pole ice core [1977, eng] **F-19681**
Variations in microparticle concentration, size distribution and elemental composition found in Camp Century, Greenland, and Byrd station, Antarctica, deep ice cores [1977, eng] **F-20128**
Thompson, T.
Atmospheric trace gases in the southern hemisphere [1973, eng] **I-19484**
Thompson, W.J.
Nitrogen in south polar ice and snow: tool to measure past solar, auroral, and cosmic ray activities [1977, eng] **F-19679**
Non-biogenic fixed nitrogen in Antarctica and some ecological implications [1978, eng] **F-19915**
Fixed nitrogen in antarctic ice and snow [1978, eng] **F-21530**
Thomson, D.
Scott's men [1977, eng] **A-20864**
Thomson, M.R.A.
Annotated bibliography of the paleontology of lesser Antarctica and the Scotia Ridge [1977, eng] **E-20176**
Stratigraphical studies in Orville Coast and eastern Ellsworth Land [1978, eng] **E-21502**
Thomson, N.R.
Doppler shifts on whistler mode signals received at Siple Station, Antarctica [1977, eng] **K-19422**
Thomson, R.B.
Discovery of fossils at the South Pole supports the Gondwanaland hypothesis [1967, ger] **L-19433**
Thornton, I.W.B.
Philotarsidae (Psocoptera) of New Zealand and islands of the New Zealand Plateau [1977, eng] **B-19268**
Thuronyi, G.T.
Language distribution of antarctic literature [1977, eng] **A-19725**
Tierney, T.J.
Disease and injury in the southern elephant seal [1977, eng] **B-19313**
Tiews, K.
Fermented alkane and krill meal as a fish meal substitute in trout fodder [1977, ger] **B-20969**
Tikhomirov, I.I.
Food ration characteristics of winters at antarctic stations [1975, eng] **H-20988**
Human adaptation and health in Antarctica [1978, rus] **H-21707**
Timachev, V.F.
Current measurement by means of buoys in the Drake Passage [1978, rus] **J-20637**
Timm, R.W.
Marine nematodes of the order Desmoscolecida from McMurdo Sound, Antarctica [1978, eng] **B-20854**
Redescription of the marine nematodes of Shackleton's British Antarctic Expedition of 1907-1909 [1978, eng] **B-20855**
Timmis, R.
Major rockfall and debris slide on the Lyell Glacier, South Georgia [1978, eng] **E-20009**
Timokhov, L.A.
Problems of sea ice cover studies [1977, eng] **F-19784**
Seasonal variability of Antarctic sea ice extent: its numerical modeling [1977, eng] **F-20889**
Tingey, R.J.
Gravity evidence for a major crustal fracture in eastern Antarctica [1976, eng] **L-20696**
Titheridge, J.E.
Depressions in midlatitude F-region under relatively quiet geomagnetic conditions [1977, eng] **K-19803**
Todd, F.S.
Permanent breeding colony of high antarctic penguins for research and education [1977, eng] **B-19601**
Establishment of a high antarctic penguin colony and controlled environment breeding of Adélie penguins (Pygoscelis adeliae) [1978, eng] **B-21594**
Tohyama, F.
Attitudes of the antarctic sounding rocket vehicles [1978, eng] **K-20956**
Magnetic field observations with sounding rockets [1979, jap] **K-21683**
Tokyo. National Institute of Polar Research
National Institute of Polar Research, Tokyo, Japan [1978, eng] **A-20946**
Tolkach, V.V.
Yttrium-90 absorption by krill [1977, eng] **B-19276**
Tolstikov, E.I.
Antarctica—the peace continent [1978, rus] **A-21687**
Meteorological research in the Arctic and Antarctic during the Soviet regime [1977, rus] **I-19587**
Tomo, A.P.
New distribution of *Champsocephalus gunnari* Lönnberg (Pisces, Chaenichthyidae) [1970, spa] **B-19738**
Birds that fly [1975, spa] **B-20264**
Toole, J.M.
Anatomy of the Antarctic Polar Front in the Drake Passage [1978, eng] **J-21048**
Torii, T.
Activities of Japanese party in McMurdo Sound area 1976-77 [1977, eng] **A-19529**
Studies of the radium, uranium and thorium concentrations in DVDP cores of Wright Valley [1978, eng] **E-20366**
Organic constituents of antarctic lake waters and sediments of the McMurdo Sound region [1978, eng] **E-20370**
Antarctic saline lakes—stable isotopic ratios, chemical compositions and evolution [1979, eng] **E-21126**
View of the formation of saline waters in the dry valleys [1978, eng] **F-20374**
Torochkova, G.I.
Antarctic gravity anomaly map [1978, rus] **C-21702**
Toropov, G.A.
Climatic zonality of types of seacoasts [1977, rus] **E-19286**
Torres de la Llosa, J.P.
International moratorium on whales [1976, spa] **A-20195**
Torres N., D.
Antarctic fur seal, *Arctocephalus gazella* (Peters). in the Chilean Antarctic (Pinnipedia—Otariidae) [1977, spa] **B-20908**
Toyama, T.
Visit to Antarctica [1976, jap] **A-19428**
Trabucco, W.J.
Jupiter: a new tool for magnetospheric research [1978, eng] **K-21630**
Trave, J.
Studies of terrestrial microarthropods on Amsterdam and St. Paul Islands. 1. Amsterdam Island: preliminary quantitative study [1973, fre] **B-19308**
Trenberth, K.E.
Fluctuations and trends in indices of the southern hemispheric circulation [1975, eng] **I-19273**
Surface atmospheric tides in New Zealand [1977, eng] **I-20186**
Trepov, G.V.
Investigation of a subglacial lake near Molodezhnaya Station [1977, rus] **E-19796**
Studying the antarctic ice sheet by radio-echo sounding [1978, rus] **F-20679**
Studies of antarctic glacier structure [1978, rus] **F-20745**
Treshnikov, A.F.
Research vessels carry their names [1978, rus] **A-20608**

Treshnikov, A.F. *(cont.)*
Current status of arctic and antarctic research and prospects for further development [1978, rus] **A-20610**
Wind drift of antarctic sea ice [1977, eng] **F-19788**
Polar experiment results and plans [1978, rus] **I-20611**
Current status of Soviet investigations of the Arctic and Southern Oceans [1977, rus] **J-19588**
Problems of the Arctic and the Antarctic, collection of articles; Vol.47, 1977 [1977, eng] **J-19781**
Circulation of the world ocean: global studies [1977, eng] **J-19782**
Main results of observations under the POLEX-South program in the Drake Passage (1975-76) and prospects for further Southern Ocean research [1978, rus] **J-20634**
Studying Southern Ocean circulation [1978, rus] **J-20635**
Results and prospects of Soviet research in the Southern Ocean [1978, rus] **J-20676**
Circumpolar countercurrent of the Southern Ocean [1978, eng] **J-21166**
Vertical structure of the Antarctic Circumpolar Current in the Drake Passage on the basis of field data [1978, rus] **J-21355**
Soviet research in the Southern Ocean [1978, rus] **J-21693**

Treves, S.B.
Geology of some volcanic rocks from the Ross Island, Mount Morning and southern Victoria Land areas [1977, eng] **E-19658**
Summary of field activities of the Dry Valley Drilling Project 1972-1973 and 1973-1974 [1978, eng] **E-19981**
K/Ar age determinations on DVDP 1 and 2 core samples [1978, eng] **E-20369**
Geology of DVDP 1 and the hyaloclastite of DVDP 3, Hut Point Peninsula, Antarctica [1978, eng] **E-21520**

Trillmich, F.
Feeding territories and breeding success of South Polar skuas [1978, eng] **B-19811**

Trivelpiece, W.
Behavioral and ecological adaptations in pygoscelid penguins [1977, eng] **B-19600**
Behavioral and ecological adaptations in pygoscelid penguins [1978, eng] **B-21591**
Breeding status of southern elephant seals at King George Island [1978, eng] **B-21597**

Troitskaia, V.A.
Diurnal latitude variation of the location of the dayside cusp [1977, eng] **K-19371**
Determination of the position of the polar boundary of the day cusp from the intensity of high-latitude pulsations [1976, eng] **K-21167**
Isolated bursts of type Pc1b geomagnetic pulsations at high latitudes [1978, eng] **K-21242**
Method of locating the Pc1 source and hot plasma parameters in the generation region [1979, eng] **K-21381**
Results of studying electromagnetic phenomena in the Antarctic [1978, rus] **K-21688**

Truesdale, R.S.
Late Quaternary paleoecology and paleoclimatology inferred from Ross Sea sediments [1978, eng] **E-21575**

Tsareva, L.D.
AKP unit for producing protein paste from krill [1972, rus] **A-19847**

Tsigel'nitskiĭ, I.I.
Two-dimensional temperature, relative humidity and wind speed distribution (according to data from Soviet antarctic stations) [1977, rus] **I-19842**

Tsuchiya, K.
Measurement of snow and ice through artificial satellites [1977, jap] **F-19818**

Tsukui, A.
Inactivation of enzymes and chemical change in antarctic krill as a result of boiling [1976, jap] **B-19447**

Tsurikov, V.L.
Photosynthesis of algae in ice [1978, eng] **B-21279**

Tsydzik, A.V.
Methods and results of the gradient and micropulsation measurements of air temperature and wind velocity [1977, rus] **I-20427**

Tucholke, B.E.
Sedimentation processes and acoustic stratigraphy in the Bellingshausen Basin [1977, eng] **E-19264**

Tucholke, B.R.
History of sedimentation and abyssal circulation on the Greater Antilles Outer Ridge [1974, eng] **J-21212**

Tuck, G.S.
Observations at sea of seabirds in the sub-antarctic and antarctic zones south of 50 deg—late November, 1973 to late March, 1974 [1975, eng] **B-20389**

Tucker, A.J.
Radio scintillation studies [1977, eng] **K-19723**

Tucker, G.B.
Observed zonal wind cycle in the southern hemisphere stratosphere [1979, eng] **I-21314**

Tuffrau, M.
A new *Euplotidae: Cytharoides balechi,* n. g., n. sp., Hypotrich ciliate from Antarctica [1974, fre] **B-21117**

Tuliakov, V.V.
Initial results of rocket studies of charged particle streams in Antarctica [1978, rus] **K-20766**

Tulinov, V.F.
Initial results of rocket studies of charged particle streams in Antarctica [1978, rus] **K-20766**

Turner, J.S.
On melting icebergs [1978, eng] **F-20907**

Turner, J.T.
Productivity of the antarctic and tropical/subtropical regions: a comparative study [1977, eng] **B-20043**

Turner, M.D.
Antarctic mineral resources [1978, eng] **E-21079**

Turner, R.L.
Organic and inorganic composition of post-metamorphic growth stages of *Ophionotus hexactis* (E.A. Smith) (Echinodermata: Ophiuroidea) during intraovarian incubation [1979, eng] **B-21174**

Twichell, D.C.
Sediment distribution around the Bouvet triple junction [1978, eng] **E-20358**

Tymchuk, Kh.K.
Spatial and temporal characteristics of quasi-biweekly fluctuations in tidal force at high latitudes [1977, rus] **J-20081**

Tyrrell, D.A.J.
Aspects of infection in isolated communities [1977, eng] **H-20245**

U.S. Army Cold Regions Research and Engineering Laboratory
Soviet antarctic expedition bulletin, vol. 92, 1976: selected articles [1977, eng] **F-19402**

U.S. Central Intelligence Agency
Polar regions: atlas [1978, eng] **C-20355**

U.S. Coast and Geodetic Survey
Sky-Hi Station report, Dec. 1961-Feb. 1962 [1962, eng] **K-19743**
Antarctic seismological bulletin, Jan.-Sep. 1965, Apr. 1966-Apr. 1972 [1965, eng] **L-19436**
Magnetograms and hourly values: Byrd Station, Antarctica [1964, eng] **L-19486**
Antarctic seismological bulletin [1972, eng] **L-19532**

U.S. Coast Guard
Deep Freeze 1978 cruise report [1978, eng] **G-19865**
Polar transportation requirements study report. Volume 3. Appendixes "B"-"J" [1968, eng] **G-21208**
Polar transportation requirements study report. Volume 2. Appendix "A". Systems analysis [1968, eng] **G-21209**
Polar transportation requirements study report. Volume 1 [1968, eng] **G-21211**
Polar icebreaker cruise report, Operation *Deep Freeze* '79 [1979, eng] **G-21256**
Deep Freeze 1979 Cruise Report [1979, eng] **G-21488**

U.S. Congress. House. Committee on Merchant Marine and Fisheries. Subcommittee on Fisheries and Wildlife Conservation and the Environment
Marine Mammal amendments. Hearings on Save the Great Whales (H.J. Res. 923), Killer whales (H.R. 12460, H.R. 12646, S. 3130), and Tuna-Porpoise amendments (H.R. 13865, H.R. 13883), 94th Congress, 2nd Session [1976, eng] **M-20379**
Antarctic fauna and flora conservation (H.R. 7749). Hearings before the Subcommittee on Fisheries and Wildlife Conservation and the Environment...95th Congress, 1st Session [1978, eng] **M-20380**

U.S. Congress. House. Committee on the Judiciary. Subcommittee on Immigration, Citizenship, and International Law
Extraterritorial criminal jurisdiction. Hearing on H.R. 763, H.R. 6148, and H.R. 7842, 95th Congress, 1st Session [1977, eng] **M-20381**

U.S. Defense Mapping Agency Aerospace Center
Antarctica—mean gravity anomalies [1974, eng] **L-21007**

U.S. Department of State
Final environmental impact statement on the negotiation of a regime for conservation of antarctic marine living resources [1978, eng] **B-20221**

U.S. Environmental Data Service
Environmental inventories: Antarctic area [1978, eng] I-20425
U.S. National Oceanic and Atmospheric Administration. Environmental Data and Information Service
Environmental inventories Antarctic area [1978, eng] A-21359
U.S. National Oceanographic Data Center
Inventory of archived data [1969, eng] J-21213
U.S. National Science Foundation
Antarctic journal of the United States, Vol.13, No.3 [1978, eng] A-20858
U.S. Antarctic program [1979, eng] A-21655
U.S. National Weather Records Center
Climatological data for antarctic stations, No.10, January 1967-December 1968 [1970, eng] I-21121
U.S. Naval Construction Battalion Center, Port Hueneme, Calif. Civil Engineering Laboratory
Portland cement concrete for Antarctica [1975, eng] G-20802
4-by-4 cargo/passenger van with high flotation tires [1973, eng] G-20813
4-by4 station wagon/light cargo vehicle with high flotation tires [1973, eng] G-20814
Road transitions between land, snow and ice [1975, eng] G-20815
Caulking compounds for application at low temperatures [1975, eng] G-20816
Snow transport equipment model 1000 towed snowplow carrier [1974, eng] G-20817
U.S. Naval Oceanographic Office
Pacific Ocean. Biology of the Pacific Ocean. Part 2. The deep-sea bottom fauna. Pleuston [1970, eng] B-20491
Report of the Antarctic Ice Observing and Forecasting Program—1964 [1966, eng] F-19946
Report of the Antarctic Ice Observing and Forecasting Program—1965 [1967, eng] F-19947
Report of the Antarctic Ice Observing and Forecasting Program—1966 [1967, eng] F-19948
U.S. Naval Support Force, Antarctica
Operation *Deep Freeze;* Operation order No.1-79 [1978, eng] G-20783
U.S. Navy. Fleet Weather Facility
Antarctic ice charts 1975-76 [1977, eng] F-20521
U.S. Navy Task Force 199
Report of Antarctic Development Squadron Six: Operation *Deep Freeze* 78 [1978, eng] G-20415
Report of Operation *Deep Freeze* 78, 1977-1978 [1978, eng] G-20416
Udvardy, M.D.F.
Did Santa Rosalia like sea-birds [1974, eng] B-20054
Ueda, K.
Body burdens of cesium-137 and potassium-40 in 21 members of the wintering party of the 16th JARE [1977, jap] H-19301
Ugolini, F.C.
Antarctic soil studies using a scanning electron microscope [1978, eng] E-20106
Ul'ev, V.A.
Time of peak noontime recovery effect [1977, rus] K-20168
PCA variations during shock-wave proton precipitation July 24-25, 1970 [1977, rus] K-21137
Unwin, R.S.
Measurement of the drift of auroral radar echoes with the radar auroragraph [1978, eng] K-20183
Uriupova, G.M.
Krill meal as poultry feed [1976, rus] B-19994
Usanov, F.F.
Glacial surface marking trials [1977, rus] C-19579
Ushakov, S.A.
Crust and upper mantle dynamics in regions of continental glaciation [1969, rus] L-19855
Utsumi, T.
New computer system of the National Institute of Polar Research [1977, eng] A-19530
Conversational system of spectrum analysis by the use of graphic display [1978, jap] A-20826
Vahlquist, B.
Anders Sparrman and his translation of Rosén von Rosenstein's textbook on children's diseases during Captain Cook's expedition to the antarctic regions and round the world (1772-1775) [1977, eng] A-19351
Vaĭgachev, A.Z.
Geodetic work in Alasheyev Bight [1968, eng] C-20341
Valencio, D.A.
Palaeomagnetism and K-Ar age of the Upper Ordovician Alcaparrosa Formation, Argentina [1978, eng] L-21230
Valentine, G.C.
Polar logistic support: the United States Navy [1978, eng] G-20208
Valenzuela, E.
Structural observations in the Darwin Mountains, Antarctica and Tierra del Fuego: 77-4 Cruise of the r/v *Hero* [1977, spa] E-21335
Vallacher, R.R.
Relationship between cohesiveness and effectiveness in small isolated groups: a field study [1974, eng] H-21072
Vallance, S.
Relationships between ascorbic acid and serum proteins of the immune system [1977, eng] H-19488
Vallon, M.
Bedrock topography of Ampère Glacier (Kerguelen Islands, T.A.A.F.) [1978, fre] F-20732
Mass balance and recent fluctuations of Ampère Glacier (Kerguelen Islands, T.A.A.F.) [1978, fre] F-20733
Van Aarde, R.J.
Sub-antarctic house mice: colonization, survival and selection [1978, eng] B-19952
Van Andel, T.H.
Depositional history of the South Atlantic Ocean during the last 125 million years [1977, eng] J-19321
Cenozoic hiatuses in pelagic sediments [1978, eng] J-21020
Van Beveren, M.
Bird ringing in the Crozet Archipelago, Kerguelen, New Amsterdam and St. Paul Islands [1976, eng] B-20777
Note on the ringing of birds in the Kerguelen archipelago since 1951 [1972, fre] B-20897
Bird ringing in the Crozet Archipelago, Kerguelen, New Amsterdam and St. Paul Islands [1976, eng] B-21372
Van Couvering, J.
Late Neogene chronostratigraphy, biostratigraphy, biochronology and paleoclimatology [1973, eng] E-21195
Van Loon, H.
Trends of winter temperature in the Southern Hemisphere [1978, eng] I-21111
Vanney, J.R.
Outcrops, currents and facies in the east Pacific antarctic zone (Bellingshausen and Amundsen seas) [1977, fre] J-20863
Varcoe, G.E.
Concreting in Antarctica [1978, eng] G-20875
Vartykian, V.G.
Artificial borehole deflection in Antarctica [1977, rus] F-19884
Vasil'chikov, N.V.
Prospects for the industrial exploitation of Antarctica [1976, rus] A-20005
Vasil'ev, V.F.
Summer turbulent atmosphere-ocean exchange in the Drake Passage in 1976 [1978, rus] I-20643
Free-atmosphere energy characteristics over the Drake Passage in the summer of 1976 [1978, rus] I-20644
Features of radiation balance at the water surface in the Drake Passage, summer 1976 [1978, rus] J-20645
Vasilevskiĭ, N.N.
Environment and psychophysiological aspects of human adaptation in Antarctica [1978, rus] H-21034
Vassal, J.
F-lacuna events in Terre-Adelie and their relationship with the state of the ionosphere [1978, eng] K-20629
Vaudrey, K.D.
Ice engineering—study of related properties of floating sea-ice sheets and summary of elastic and viscoelastic analyses [1977, eng] F-19510
Ice excavation machine [1977, eng] G-20776
Vavra, C.L.
Stratigraphy and sedimentary petrology of the Fremouw Formation (Lower Triassic), Cumulus Hills, central Transantarctic Mountains [1978, eng] E-21513
Vedernikov, V.I.
Photosynthesis of algae in ice [1978, eng] B-21279
Veevers, J.J.
Spreading history of the eastern Indian Ocean and India's northward flight from Antarctica and Australia: Discussion and reply [1978, eng] E-20529
Channel Country fluvial sands and associated facies of central-eastern Australia: modern analogues of Mesozoic desert sands of South America [1979, eng] E-21248
Vennum, W.R.
Igneous and metamorphic petrology of the southwestern Dana Mountains, Lassiter Coast, Antarctic Peninsula [1978, eng] E-19779

Verwoerd, W.J.
Geology and geochemistry of Bouvet Island [1976, eng] **E-20146**
Vialov, S.S.
Visco-plastic flow of glacial covers and the laws of ice deformation [1970, eng] **F-21090**
Vieira, C.
Geology of the Gerlache Strait between 64 and 65 deg S, Chilean Antarctica [1976, spa] **E-21009**
Vilas, J.F.
Palaeomagnetism and K-Ar age of the Upper Ordovician Alcaparrosa Formation, Argentina [1978, eng] **L-21230**
Vilenskiĭ, V.D.
Investigating atmospheric aerosol transfer by means of geochemical study of the antarctic ice sheet [1976, rus] **F-19285**
Sulfate content in the antarctic ice cap [1977, eng] **F-21122**
Some features of formation of oxygen isotopic composition in East Antarctic snow cover [1978, rus] **F-21486**
Villarroel, E.G.
Notes for a book on "The Diplomatic History of the Antarctic Treaty and Chilean Participation in its Elaboration" [1977, spa] **M-21296**
Vinogradov, M.E.
Marine biology. Vol.2. Biological productivity of the ocean [1977, rus] **B-20017**
Vinuesa, J.H.
Contribution to the knowledge of the Decapod Crustacea of Tierra del Fuego with some zoogeographical observations [1977, spa] **B-21429**
Vivian, R.
Glaciological field stations, Parts 1 and 2 [1979, eng] **F-21291**
Vladimirov, O.A.
Cyclonic eddy in the Antarctic Circumpolar Current south of Australia: results of Soviet-American observations aboard the R/V *Professor Zubov* [1978, eng] **J-20553**
Vladimirov, V.O.
Features of radiation balance at the water surface in the Drake Passage, summer 1976 [1978, rus] **J-20645**
Vladimirskaia, E.V.
Amino acids dissolved in sea water as one of the indicators of the physiologic state of an ecosystem [1978, eng] **J-20932**
Vocke, R.D., Jr.
Ages for the vida granite and olympus granite gneiss, Victoria Valley, southern Victoria Land [1978, eng] **E-21508**
Voelker, R.P.
Operational capability of a polar research ship [1978, eng] **G-19754**
Vogt, P.R.
Long-wavelength gravity anomalies and intraplate seismicity [1978, eng] **L-19871**
Volkman, N.J.
Behavioral and ecological adaptations in pygoscelid penguins [1977, eng] **B-19600**
Behavioral and ecological adaptations in pygoscelid penguins [1978, eng] **B-21591**
Breeding status of southern elephant seals at King George Island [1978, eng] **B-21597**
Volkov, G.I.
Wide-angle electron detector [1978, eng] **K-21415**
Volokitina, L.P.
Geomorphological map of the Indian Ocean and Pacific Ocean antarctic sectors [1978, rus] **E-20807**
Voloshina, A.P.
Workshop and two tutorial seminars in Zvenigorod, February 1978 [1978, rus] **F-21386**
Von Herzen, R.P.
Heat flow in the Weddell Sea [1978, eng] **J-21572**
Heat flow on the Pacific-Antarctic Ridge [1978, eng] **L-21019**
Voronin, V.A.
Age determination in green notothenia *(Notothenia gibberifrons* Lönnb, Notothenidae) of the southwest Atlantic [1975, rus] **B-21325**
Voronov, P.S.
Antarctic neotectonics and its mapping [1969, rus] **L-19854**
Voskresenskiĭ, A.I.
Problems of antarctic meteorology [1978, rus] **I-20678**
Meteorological problems of the Southern Ocean [1978, rus] **I-20718**
State of the art and future prospects for antarctic meteorological research [1978, rus] **I-21691**
Vostretsov, R.N.
Deformation of the sides of a deep borehole in the antarctic ice cover at Vostok Station [1978, rus] **F-20725**
Vranckx, R.
Production of lobsters in the waters of Saint Paul and Amsterdam Islands [1977, eng] **B-20044**
Vucetich, C.G.
Quaternary stratigraphy and glacial history of the Lower Taylor Valley, Antarctica [1978, eng] **E-21354**
Vyshkvartseva, N.V.
Structure of the mandibles in the genus *Calanus* s.l. in relation to latitudinal zonality [1975, eng] **B-20671**
Wada, M.
Rocket measurements of auroral-zone energetic electrons at Syowa Station, Antarctica. 1. Characteristics of electrons under no geomagnetic disturbance [1978, eng] **K-20949**
Observations of auroral-zone precipitating electrons by antarctic rockets [1979, jap] **K-21676**
Data processing for auroral electron analysis [1979, jap] **K-21678**
Wadati, K.
Recalling 20 years of JARE [1978, jap] **A-19773**
Wade, F.A.
Reconnaissance geologic map of the Boyd Glacier quadrangle, Marie Byrd Land, Antarctica [1977, eng] **E-19400**
Reconnaissance geological map of the Guest Peninsula quadrangle, Marie Byrd Land, Antarctica [1977, eng] **E-19401**
Geology of Queen Maud Mountains and Marie Byrd Land [1977, eng] **E-19647**
Volcanic history in Marie Byrd Land: implications with regard to Southern Hemisphere tectonic reconstructions [1976, eng] **E-20149**
Geologic survey of Ruppert-Hobbs Coasts sector, Marie Byrd Land [1978, eng] **E-21499**
Waikato. University. Antarctic Research Unit
Report No.4 [1975, eng] **A-20212**
Report No.7 [1978, eng] **A-20213**
Wakatsuchi, M.
On sea ice near Showa Station, Antarctica [1977, jap] **F-20047**
Wakefield, S.J.
Geochemistry of basalt-sea-water interactions: evidence from Deception Island, Antarctica, and Reykjanes, Iceland [1977, eng] **E-20618**
Walcott, R.I.
Present tectonics and Late Cenozoic evolution of New Zealand [1978, eng] **E-19810**
Walesby, N.J.
Molecular mechanisms of temperature adaptation in fish myofibrillar adenosine triphosphatases [1977, eng] **B-19448**
Walker, A.D.M.
Formation of whistler ducts [1978, eng] **K-20100**
Wallace, J.M.
Global distribution of the annual and semiannual cycles in surface temperature [1978, eng] **I-20885**
Wallace, W.
James Murray, F.R.S.E., 1865-1914—a belated biography [1976, eng] **A-20916**
Walraven, R.L.
Light intensity and polarization measurements at the South Pole [1976, eng] **K-21664**
Walsh, J.J.
Statistical analysis of the phytoplankton community within the Antarctic Convergence [1969, eng] **B-19399**
Walton, A.
Glasgow University radiocarbon measurements II [1970, eng] **I-19844**
Waltz, E.C.
Breeding status of southern elephant seals at King George Island [1978, eng] **B-21597**
Wamser, R.C.
Trace elements in volcanic rocks of Ross Island and vicinity, Antarctica, amd implications for the origin of alkali-basalt magma [1978, eng] **E-20365**
Warburton, J.A.
Precipitation-forming mechanisms and the chemistry of precipitation on the Ross Ice Shelf, Antarctica [1977, eng] **F-20113**
Atmospheric processes and the chemistry of snow on the Ross Ice Shelf, Antarctica [1978, eng] **F-20393**
Role of precipitation processes in chemistry of polar snows [1976, eng] **F-21672**
Use of an X-band radar and satellite communications link for studies of air-sea interactions on the Antarctic Peninsula [1978, eng] **G-19757**
Atmosphere's role in chemical composition of Ross Ice Shelf snow [1977, eng] **I-19697**
Lidar and replication studies of ice crystal precipitation at the South Pole [1977, eng] **I-19701**

Air-sea interaction studies using an X-band radar at Palmer Station [1977, eng] I-19707
Report of polar meteorology workshop, Reno, Nevada, 1975 [1976, eng] I-21660
Lidar and replicator measurements of ice crystal precipitation at South Pole [1976, eng] I-21671
Satellite link between Palmer Station and Nevada [1977, eng] K-19728

Wardle, P.
Goats on Auckland Islands [1978, eng] B-20903
Origin of the New Zealand mountain flora, with special reference to trans-Tasman relationships [1978, eng] B-21356

Warham, J.
Wing loadings, wing shapes, and flight capabilities of Procellariiformes [1977, eng] B-19421

Warmbt, W.
Measurements of surface ozone at Mirnyy, Antarctica [1978, ger] I-21290

Warner, R.
Biogeography and metabolism of phytoplankton and zooplankton in the Ross Sea, Antarctica [1978, eng] B-21580

Warnke, D.A.
Amino acid racemization in *Islas Orcadas* piston core 12-77-24 [1978, eng] E-21561

Warshauer, D.M.
Respiratory virus transmission at McMurdo Station: isolation of rhinoviruses from common colds during the winter fly-in period, 1976 [1977, eng] H-19591

Washburn, A.L.
Analysis of permafrost cores from antarctic dry valleys [1977, eng] E-19664

Washington, W.M.
Summary of a large-scale sea-ice model [1977, eng] F-20890
Large-scale numerical model of sea ice [1979, eng] F-21132

Watanabe, H.
First landing at Ongul Island [1978, jap] A-20433

Watanabe, K.
Bacteriological investigation of the pollution at Syowa Station [1977, jap] H-19303

Watanabe, O.
Distribution of surface features of snow cover in Mizuho Plateau [1978, eng] F-19824
Accumulation and ablation at Syowa Station [1978, eng] F-19830
Distribution of accumulation measured by the snow stake method in Mizuho Plateau [1978, eng] F-19831
Stratigraphic studies of the snow cover in Mizuho Plateau [1978, eng] F-19833
Estimation of mass input in the Shirase and the Sôya drainage basins in Mizuho Plateau [1978, eng] F-19834
Oxygen isotopic composition of the surface snow in Mizuho Plateau [1978, eng] F-19838
Stratigraphic analyses of firn and ice at Mizuho Station [1978, eng] F-21299
Compiled stratigraphic data from cores drilled at Mizuho Station [1978, eng] F-21307

Watanuki, K.
Geochemical features of antarctic lakes [1977, jap] E-19292

Watanuki, T.
Saline lake algae in Antarctica [1978, jap] B-20436

Watkins, N.D.
Separation of primary ice-rafted debris from lag deposits, utilizing manganese micronodule accumulation rates in abyssal sediments of the Southern Ocean [1978, eng] E-20798

Watson, D.J.
Observations on submerged glacial ice in McMurdo Sound, Antarctica [1978, eng] F-20392

Watson, G.S.
Counting penguins [1975, eng] B-20495

Watson, J.
Antarctic explorers: new definitives for British Antarctic Territory [1973, eng] A-20059

Watson, M.D.
Belcher Islands Expedition—1971 [1971, eng] K-21479

Watters, W.A.
Paleomagnetism, K-Ar dating and tectonic interpretation of Upper Cretaceous and Cenozoic volcanic rocks of the Chatham Islands, New Zealand [1977, eng] E-19805

Watts, D.R.
Bird and seal observations at Joinville Island and offshore islands [1978, eng] B-21595
Geologic studies in the northern Antarctic Peninsula, R/V Hero cruise 78-1B, February 1978 [1978, eng] E-21505

Weand, B.L.
Nutrient fluxes in Lake Bonney—a meromictic antarctic lake [1977, eng] B-20892

Webb, E.N.
Location of the South Magnetic Pole [1977, eng] L-19349

Webb, P.N.
"Complete" seal carcass at Lake Miers, Miers Valley [1977, eng] B-19599
Stratigraphy of the Taylor and lower Victoria groups (Beacon Supergroup) between the MacKay Glacier and Boomerang Range, Antarctica [1977, eng] E-20175
Initial report on geological materials collected at RISP site J9, 1977-78 [1978, eng] E-20703
Miocene glaciomarine sediments from beneath the southern Ross Ice Shelf, Antarctica [1979, eng] E-21095
Miocene glaciomarine sediments from site J-9, Ross Ice Shelf, Antarctica [1978, eng] E-21573

Webb, R.
Animals of the antarctic islands [1973, eng] B-20906

Weber, E.J.
Optical diagnostics of the August 1972 PCA event [1976, eng] K-20509

Webers, G.F.
Geology of the Ellsworth Mountains to Thiel Mountains ridge [1977, eng] E-19646
Paleontological investigations in the Ellsworth Mountains, West Antarctica [1977, eng] E-19668

Webster, J.J.
Antarctica. An information paper presented by Senator the Honourable J.J. Webster, Minister for Science [1977, eng] A-19269

Weeks, W.F.
Integrated approach to the remote sensing of floating ice [1977, eng] F-19861
Some elements of iceberg technology [1978, eng] F-20068
Some elements of iceberg technology [1978, eng] F-20454

Weiblen, P.W.
Petrochemical model for the genesis of the volcanic rocks from Ross Island and vicinity, Antarctica [1978, eng] E-20373
Correlation of clinopyroxene composition with environment of formation based on data from Ross Island volcanic rocks [1978, eng] E-20375

Weigmann, G.
Evolution of the family Ameronothridae (Acari:Oribatei) 1. Morphological aspects [1977, eng] B-19748
Evolution of the family Ameronothridae (Acari: Oribatei) 2. Ecological aspects [1977, eng] B-19749

Weill, G.
Optical observations systems for the ARAKS experiment [1978, eng] K-21420

Weinrich, J.A.
Adelie penguin *(Pygoscelis adeliae)* embryonic development at different temperatures [1978, eng] B-20632

Weiss, H.V.
Natural enrichment of elements in snow [1978, eng] F-20391
Examination of radioactivity in the crushed rock from the PM-3A nuclear reactor site, McMurdo, Antarctica [1976, eng] G-20496

Weissel, J.K.
Plate tectonics synthesis: the displacements between Australia, New Zealand, and Antarctica since the Late Cretaceous [1977, eng] E-19265

Wellman, P.
Gravity evidence for a major crustal fracture in eastern Antarctica [1976, eng] L-20696

Wells, R.M.
Physiological adaptation in antarctic fishes [1978, eng] B-20314
Respiratory adaptation and energy metabolism in antarctic nototheniid fishes [1978, eng] B-21403

Wells, R.M.G.
Observations on the haematology and oxygen transport of the New Zealand fur seal, Arctocephalus forsteri [1978, eng] B-20551

Wendt, S.
Baseline microbiological data for soils of the Dufek Massif [1977, eng] B-19611

Werdal, P.J.
Report on Japanese Antarctic Whaling Expedition, 1974-1975, by the No.2 *Tonan Maru* [1975, eng] B-21015

West, K.R.
Novelties in Australian *Epilobium* (Onagraceae) [1977, eng] B-19808

Whillans, I.M.
Equation of continuity and its application to the ice sheet near "Byrd" station, Antarctica [1977, eng] **F-19801**
Inland ice sheet thinning due to Holocene warmth [1978, eng] **F-20572**
Surface mass-balance variability near "Byrd" Station, Antarctica, and its importance to ice core stratigraphy [1978, eng] **F-20652**
Glaciology near Byrd Station [1978, eng] **F-21534**
White, G.H.
Global distribution of the annual and semiannual cycles in surface temperature [1978, eng] **I-20885**
White, M.G.
New species of marine isopod of the genus *Antarcturus* (Isopoda, Valvifera) from the South Orkney Islands [1979, eng] **B-21371**
Whitehurst, B.B.
Provisional cotidal charts for the southern Ross Sea [1977, eng] **J-19623**
Whitworth, T.
FDRAKE 77 [1977, eng] **J-19624**
Oceanographic data collected aboard R/V *T.G. Thompson* during FDRAKE 76, Legs I and II [1978, eng] **J-20413**
Whitworth, T., III
Structure and transport of the Antarctic Circumpolar Current at Drake Passage from short-term measurements [1977, eng] **J-19318**
Oceanographic station data collected aboard R/V *Melville* during FDRAKE 75 [1977, eng] **J-20078**
Wiggin, D.B.
Electron density in the plasmasphere: whistler data on solar cycle, annual, and diurnal variations [1978, eng] **K-20534**
Wilbanks, J.R.
Geology of the Fosdick Mountains, Marie Byrd Land, West Antarctica [1969, eng] **E-19543**
Wilcox, J.M.
Comparison of inferred and observed interplanetary magnetic field polarities, 1970-1972 [1975, eng] **K-21071**
Wilhelm, F.
Snow and glacier studies [1975, ger] **F-20398**
Wilkes, O.
Story of Nukey Poo [1978, eng] **G-20945**
Wilkniss, P.E.
Atmospheric trace gases in the southern hemisphere [1973, eng] **I-19484**
Wille, H.H.
Alluring poles; struggle for the North and South Poles [1977, ger] **A-19800**
Williams, A.J.
Geology and the distribution of Macaroni penguin colonies at Marion Island [1978, eng] **B-21154**
Williams, D.F.
Comparison of radiolarian/planktonic foraminiferal paleooceanography of the subantarctic Indian Ocean [1978, eng] **E-20804**
Late Quaternary fluctuations of the Polar Front and Subtropical Convergence in the southeast Indian Ocean [1976, eng] **J-19914**
Williams, I.C.
Paramonostomum signiensis n.sp. (Trematoda: Notocotylidae) from the Sheathbill, *Chionis alba* (Gmelin), at Signy Island, South Orkney Islands [1969, eng] **B-19339**
Trematode parasites of the Sheathbill, *Chionis alba* (Gmelin), from Signy Island, South Orkney Islands [1968, eng] **B-19340**
Nematode and acanthocephalan parasites of the Sheathbill, *Chionis alba* (Gmelin), at Signy Island, South Orkney Islands and a summary of host parasite relationships in the Sheathbill [1969, eng] **B-19342**
Williams, J.
Trends of winter temperature in the Southern Hemisphere [1978, eng] **I-21111**
Williams, P.M.
Tritium and carbon-14 distributions in seawater from under the Ross Ice Shelf Project ice hole [1979, eng] **J-21100**
Tritium and carbon-14 distributions in McMurdo Sound, 1977 [1978, eng] **J-21545**
Williams, P.T.
Geochemistry of basalt-sea-water interactions: evidence from Deception Island, Antarctica, and Reykjanes, Iceland [1977, eng] **E-20618**
Williams, R.T.
Provisional cotidal charts for the southern Ross Sea [1977, eng] **J-19623**
Ocean tide and waves beneath the Ross Ice Shelf, Antarctica [1979, eng] **J-21099**
Spatial variation of the K1, O1, and M2 constituents of the southern Ross Sea tide [1978, eng] **J-21556**
Ocean wave measurements at the RISP J-9 camp [1978, eng] **J-21557**
Williamson, T.
Rheological implications of the internal structure and crystal fabrics of the West Antarctic ice sheet as revealed by deep core drilling at Byrd Station [1976, eng] **F-19330**
Wilson, A.C.
Penguin evolution: protein comparisons demonstrate phylogenetic relationship to flying aquatic birds [1976, eng] **B-20927**
Wilson, A.T.
Peridot on Ross Island—Antarctica [1974, eng] **E-20593**
Dating of geochemical events in Lake Bonney, Antarctica, and their relation to glacial and climate changes [1977, eng] **E-20757**
New Zealand work at Vostok Station [1978, eng] **F-20308**
Wilson, C.R.
Auroral infrasonic waves observed at Windless Bight, Antarctica [1977, eng] **K-19724**
Wilson, G.P.
Antarctica, the Southern Ocean, and the law of the sea [1977, eng] **M-21065**
Wilson, J.G.
Mt. Lister: an antarctic climb [1963, eng] **A-21721**
Wilson, R.B.
Evaluation of possible United States involvement in an antarctic krill fishery [1976, eng] **B-19895**
Wilson, T.
Structural observations in the Darwin Mountains, Antarctica and Tierra del Fuego: 77-4 Cruise of the r/v *Hero* [1977, spa] **E-21335**
Wind, F.H.
Cretaceous *Islas Orcadas* core from the Falkland (Malvinas) Plateau, southwest Atlantic [1977, eng] **E-19635**
Paleoenvironmental analysis and correlation of a Cretaceous *Islas Orcadas* core from the Falkland Plateau, Southwest Atlantic [1977, eng] **E-20137**
Winn, R.D., Jr.
Upper Mesozoic flysch of Tierra del Fuego and South Georgia Island: a sedimentologic approach to lithosphere plate restoration [1978, eng] **E-19989**
Wise, S.W., Jr.
Geologic history of the Maurice Ewing Bank of the Falkland Plateau (southwest Atlantic sector of the Southern Ocean) based on piston and drill cores [1977, eng] **E-19263**
ARA *Islas Orcadas* cruise 0775 sediment descriptions [1977, eng] **E-19354**
Cretaceous *Islas Orcadas* core from the Falkland (Malvinas) Plateau, southwest Atlantic [1977, eng] **E-19635**
Late Mesozoic-Cenozoic history of the eastern Falkland (Malvinas) Plateau based on piston and drill cores [1977, eng] **E-19636**
Basal sediment ages of *Islas Orcadas* cruise 7 piston cores [1977, eng] **E-19637**
Antarctic Marine Geology Research Facility, 1976-1977 [1977, eng] **E-19645**
Paleoenvironmental analysis and correlation of a Cretaceous *Islas Orcadas* core from the Falkland Plateau, Southwest Atlantic [1977, eng] **E-20137**
Islas Orcadas cruise 16 [1978, eng] **E-21558**
Paleontology and paleoenvironment of the Southwest Atlantic Ocean Basin [1978, eng] **E-21564**
Antarctic Marine Geology Research Facility, 1977-78 [1978, eng] **E-21639**
Core splitter for Argentine-U.S. coring program [1978, eng] **E-21640**
Witalis, R.E.
Summary of reference gas and air analysis with Applied Physics Corporation Infrared Gas Analyser No. 47 at South Pole, Antarctica, during 1961 [1962, eng] **I-19744**
Wolak, R.J.
Contractor support [1978, eng] **G-21646**
Wolf, M.G.
Ground magnetic studies of volcanic rocks in the Taylor and Wright Valleys region [1977, eng] **E-19659**
Wolfram, W.
Measurement of argon isotopes in air samples and comparison with computations from a model [1973, ger] **I-19344**
Wong, S.K.
Philotarsidae (Psocoptera) of New Zealand and islands of the New Zealand Plateau [1977, eng] **B-19268**
Wood, J.D.
Magnetospheric dynamics programs at Vostok Station [1977, eng] **K-19718**

Wood, R.C.
Population study of south polar skuas *(Catharacta maccormicki)* age one to eight years [1972, eng] **B-21057**
Woodroffe, D.
Tectonic structure and petrology of the antarctic plate boundary near the Bouvet triple junction [1978, eng] **E-19869**
Wooldridge, T.H.
Report on South African participation in cruise MD08 of MS *Marion Dufresne,* March-April 1976 [1976, eng] **B-19902**
World Meteorological Organization
Polar Sub-programme [1978, eng] **I-20823**
World water
Australia may benefit as iceberg idea is refloated [1978, eng] **F-20711**
Worley, S.J.
Oceanographic data collected aboard R/V *Melville* during January-February 1977 as a part of FDRAKE 77 [1978, eng] **J-21379**
Wouts, W.M.
Campbellenchinae (Nematoda: Tylodoridae), a new subfamily from Campbell Island, with a description of two new species [1977, eng] **B-20163**
Wrenn, J.H.W.
Cenozoic subsurface micropaleontology and geology of eastern Taylor Valley, Antarctica [1977, eng] **E-20000**
Wright, A.C.
Reconnaissance study of the McMurdo volcanics northwest of the Koettlitz Glacier [1978, eng] **E-20872**
Wright, R.
Recent foraminifera [1976, eng] **B-20548**
Wu, M.-F.
Pilot study of concomitant changes in total ozone and atmospheric general circulation [1978, eng] **I-21004**
Yabuki, H.
Study on the extraterrestrial materials in Antarctica (VIII). On the distribution of the Yamato meteorites [1978, eng] **E-19922**
Petrological studies of Yamato-74 meteorites (1) [1978, eng] **E-19925**
Yagi, K.
Mineralogical and petrographical studies of the Yamato meteorites, Yamato-7301(j), -7305(k), -7308(l) and -7303(m) from Antarctica [1978, eng] **E-19924**
Petrological studies of Yamato-74 meteorites (1) [1978, eng] **E-19925**
Petrological studies of Yamato-74 meteorites (2) [1978, eng] **E-19926**
Petrology of the Yamato meteorites (j), (k), (l), and (m) from Antarctica [1978, eng] **E-21125**
Yaldwyn, J.C.
Fossil occurrence of *Jacquinotia edwardsii* [1977, eng] **E-19466**
Yamada, T.
Distribution of accumulation measured by the snow stake method in Mizuho Plateau [1978, eng] **F-19831**
Estimation of mass input in the Shirase and the Sôya drainage basins in Mizuho Plateau [1978, eng] **F-19834**
Anisotropy of ultrasonic wave velocities in Mizuho cores [1978, eng] **F-21305**
Effects of synoptic scale disturbance on seasonal variations of katabatic winds and moisture transport into Mizuho Plateau [1978, eng] **I-19829**
Yamagata, N.
Distribution of trace elements around Showa Station. 2. Trace metals distribution in Langhovde [1977, jap] **E-19294**
View of the formation of saline waters in the dry valleys [1978, eng] **F-20374**
Distribution of trace elements around Syowa Station. 1. Particulate arsenic content [1977, jap] **I-19290**
Yamagishi, H.
S-310JA-1 rocket observation of VLF emission spectra at Syowa Station in Antarctica [1978, eng] **K-20953**
Yamakoshi, A.
Riometer records of 30 MHz cosmic noise at Syowa Station Antarctica in 1976 [1977, eng] **K-19361**
Records of radio aurora at Syowa Station, Antarctica in 1976 [1978, eng] **K-20091**
Yamanaka, M.
Distribution of terrestrial plant communities near Syowa Station in Antarctica, with special reference to water supply and soil properties [1977, jap] **B-19297**
Yanai, K.
Activities of Japanese party in McMurdo Sound area 1976-77 [1977, eng] **A-19529**
Antarctica: a deep-freeze storehouse for meteorites [1977, eng] **E-19325**
Yamato-74 meteorites collection, Antarctica from November to December 1974 [1978, eng] **E-19917**
First meteorites found in Victoria Land, Antarctica, December 1976 and January 1977—Report of the U.S.-Japan joint program titled "Antarctic Search for Meteorites" 1976-1977 [1978, eng] **E-19919**
Classification for the Yamato-74 chondrites based on the chemical compositions of their olivines and pyroxenes [1978, eng] **E-19923**
Preliminary mineralogical examination of the Yamato-74 achondrites [1978, eng] **E-19927**
Yamato achondrite polymict breccias [1978, eng] **E-19928**
Oxygen isotopes in several Yamato meteorites [1978, eng] **E-19931**
Yamat-74662 meteorite: a carbonaceous chondrite Type II [1978, eng] **E-19938**
Yamato meteorites sampling [1975, jap] **E-20048**
Antarctic geological map series. Sheet 11 - Cape Hinode [1978, eng] **E-20301**
Search for meteorites [1978, jap] **E-20439**
Yanase, M.
Chemical composition of the exoskeleton of antarctic krill [1975, jap] **B-21276**
Yanchinski, S.
Shrimps offer a whale of a catch [1978, eng] **B-21219**
Yasutomi, Y.
Meteorological observations at Showa in 1974 by the 15th Japanese Antarctic Research Expedition [1977, eng] **I-19526**
Yazawa, A.
Chemical analysis of soil in East Ongul Island, Antarctica [1977, jap] **E-19295**
Yiou, F.
Measurement of Be-10 in 1,000- and 5,000-year-old antarctic ice [1978, eng] **F-20980**
Yochelson, E.L.
Late Cambrian Brachiopoda, Mollusca, and Trilobita from northern Victoria Land, Antarctica [1976, eng] **E-20142**
Yokokawa, K.
1974 visit to the new South Pole Station [1976, jap] **A-19426**
Yokoyama, K.
Morphological feature of the ice sheet in Mizuho Plateau [1978, eng] **F-19821**
Distribution of surface structures of the ice sheet in Mizuho Plateau [1978, eng] **F-19822**
Accumulation and ablation at Syowa Station [1978, eng] **F-19830**
Distribution of accumulation measured by the snow stake method in Mizuho Plateau [1978, eng] **F-19831**
Yoshida, M.
Antarctic geological map series. Sheet 17—Northern Yamato Mountains (1) Mt. Fukushima [1978, eng] **E-20302**
Yoshida, Y.
Working with the British Antarctic Survey [1978, jap] **A-20442**
Mercury profile of Mizuho ice sheet, Antarctica [1977, jap] **F-19293**
Fluctuation of the antarctic ice sheet and the Quaternary [1977, jap] **F-19584**
Chemical constituents in the surface snow in Mizuho Plateau [1978, eng] **F-19839**
Some information on topographic features and the characteristics of the ice sheet around the Yamato Mountains [1978, eng] **F-19921**
Compiled data of chemical compositions in ice cores drilled at Mizuho Station [1978, eng] **F-21311**
Yoshikawa, K.
Study on the extraterrestrial materials in Antarctica (VIII). On the distribution of the Yamato meteorites [1978, eng] **E-19922**
Yoshimura, A.
Morphological feature of the ice sheet in Mizuho Plateau [1978, eng] **F-19821**
Discharge of ice across the Sôya Coast [1978, eng] **F-19837**
Distribution of three geomagnetic components over Mizuho Plateau, Antarctica [1977, eng] **L-19523**
Gravity anomalies and bedrock relief in Mizuho Plateau [1978, eng] **L-19823**
Yoshino, T.
Data acquisition from EXOS-A (Kyokkô) at Syowa Station, Antarctica [1978, jap] **I-20827**
Measurements of ionospheric electric fields with antarctic sounding rockets S-210JA-24 and 25 [1979, jap] **K-21681**
Measurements of electric field and auroral X-rays with antarctic balloons [1979, jap] **K-21682**
Yoshioka, T.
Sickness in Antarctica [1963, jap] **H-19443**

Young, A.
Clothing man in a cold environment [1978, eng] **G-20318**
Young, S.R.
Metabolic adaptations of antarctic terrestrial micro-arthropods [1978, eng] **B-21221**
Cold tolerance of two antarctic terrestrial arthropods [1978, eng] **B-21244**
Yuan, F.F.
Detecting geomagnetic pulsations using a solenoid with a ferrite core [1978, eng] **K-21021**
Yumoto, K.
Measurement of the drift of auroral radar echoes with the radar auroragraph [1978, eng] **K-20183**
Yung, A.
Core splitter for Argentine-U.S. coring program [1978, eng] **E-21640**
Improvement of scientific systems aboard ARA *Islas Orcadas* [1977, eng] **G-19727**
Yusa, Y.
Study on thermosolutal convection in saline lakes [1976, eng] **E-20227**
Analysis of thermosolutal phenomena observed in McMurdo saline lakes [1978, eng] **E-20376**
Zaĭchikov, B.P.
Temperature and wind velocity variations in the winter polar mesosphere [1974, eng] **I-20135**
Zaĭtsev, A.
SD current direction changes in the vicinity of geomagnetic poles [1971, eng] **K-21088**
Zaĭtsev, A.N.
Polar cap geomagnetic variations studies [1978, eng] **K-21633**
Zaĭtseva, N.A.
Results of several years of study of low-frequency radiation in the antarctic atmosphere [1978, rus] **K-21692**
Zakharova, L.A.
Processing *Notothenia marmorata* roe [1971, rus] **A-20810**
Zamorano, J.H.
Distribution and spatial segregation of fish populations in South Bay, Doumer Island, Antarctic [1977, spa] **B-20911**
Zapol, W.M.
Awake breath-hold diving in the Weddell Seal [1977, eng] **B-19595**
Zavatti, S.
Antarctic expeditions of the [Italian] National Research Committee [1978, ita] **A-20233**
Zawiskie, J.M.
New Triassic vertebrates from the Fremouw Formation of the Queen Maud Mountains [1978, eng] **E-21514**
Zegarelli, P.E.
Antarctica [1978, eng] **A-20712**
Zeller, E.
Gamma ray activity from radioactive fallout at the South Pole [1978, eng] **I-21620**
Zeller, E.J.
Resource and radioactivity survey in southern Victoria Land [1977, eng] **E-19663**
Nitrogen in south polar ice and snow: tool to measure past solar, auroral, and cosmic ray activities [1977, eng] **F-19679**
Non-biogenic fixed nitrogen in Antarctica and some ecological implications [1978, eng] **F-19915**
Solar activity records planetary ice caps [1978, eng] **F-21407**
Fixed nitrogen in antarctic ice and snow [1978, eng] **F-21530**
Burial of high level radioactive wastes [1977, eng] **G-19674**
Disposal of radioactive wastes in the antarctic ice sheet: an environmental impact assessment [1978, eng] **G-19984**
Zemmels, I.
USNS *Eltanin:* an inventory of core location data with core location maps and cruise 55 core descriptions [1977, eng] **E-19353**
ARA *Islas Orcadas* cruise 0775 sediment descriptions [1977, eng] **E-19354**
Sedimentary geochemical processes near the Pacific-Antarctic Ridge [1977, eng] **E-19641**
Zenk, W.
Moored temperature time series in the Polar Front Zone during FDRAKE, 1976 [1977, eng] **J-19625**
Observations of the Antarctic Polar Front by a moored array during FDRAKE-76 [1977, eng] **J-20098**
Anatomy of the Antarctic Polar Front in the Drake Passage [1978, eng] **J-21048**
Zenkovich, B.A.
Observations of marine mammals and other animals during the antarctic expedition of the USSR Academy of Sciences (1957-1958) [1970, eng] **B-21091**
Zhukov, V.A.
Global transport rate for radioactive products and behavior of Cesium-137 in the antarctic atmosphere in 1969-70 [1977, rus] **I-20695**
Zhulin, I.A.
Investigations of auroral x-radiation in the Kerguelen-Arkhangel'skaya oblast magnetically conjugate regions [1970, eng] **K-20698**
The ARAKS project [1978, eng] **K-21408**
Broad-band wave measurements in the ARAKS experiment [1978, eng] **K-21413**
Zimmerman, H.B.
Zeolites in South Atlantic deep-sea sediments [1977, eng] **E-19848**
History of sediment lithofacies in the South Atlantic Ocean [1977, eng] **E-19852**
Zinchenko, G.N.
Coupling of mid-latitude spread-F between conjugate stations [1977, eng] **K-20430**
Zink, R.M.
Birds of the Weddell Sea [1978, eng] **B-21587**
Dispersal of algae and Protozoa by antarctic flying birds [1978, eng] **B-21590**
Zinsmeister, W.J.
Struthiolaridae (Gastropoda) fauna from Seymour Island, Antarctic Peninsula [1976, eng] **B-20397**
Effect of formation of the west antarctic ice sheet shallow-water marine faunas of Chile [1978, eng] **B-21516**
Biostratigraphy of Seymour Island, Antarctica [1978, eng] **E-19939**
Three new species of *Pulvinites* (Mollusca: Bivalvia) from Seymour Island (Antarctic Peninsula) and southern California [1978, eng] **E-20547**
Eocene nautiloid fauna from the La Meseta Formation of Seymour Island, Antarctic Peninsula [1978, eng] **E-21515**
Zlotnicki, V.
Heat flow in the Weddell Sea [1978, eng] **J-21572**
Znachko-IAvorskiĭ, G.A.
Geological features of the western part of Enderby Land [1968, eng] **E-20340**
Zögner, L.
Cartographic representation of the polar regions up to and including the 19th century [1978, ger] **C-20886**
Zoller, M.H.
Trace metals in the antarctic atmosphere [1974, eng] **I-20224**
Zoller, W.H.
Enrichment of volatile elements in the atmosphere by volcanic activity: Augustine volcano 1976 [1978, eng] **I-21050**
Determination of the chemical composition of the South Pole aerosol by instrumental neutron activation analysis [1977, eng] **I-21054**
Trace elements in the antarctic atmosphere [1978, eng] **I-21616**
Iodine, bromine and chlorine in the antarctic atmosphere [1976, eng] **I-21665**
Atmospheric concentrations and sources of trace metals at the South Pole [1976, eng] **I-21673**
Zumberge, J.H.
Mineral resources and geopolitics in Antarctica [1979, eng] **E-21652**
Zvereva, Zh.A.
Seasonal changes of antarctic plankton in the Molodezhnaya and Mirny region [1975, eng] **B-20672**
Zwally, H.J.
Ice sheet topography by satellite altimetry [1978, eng] **F-20414**
Zwick, P.
Edwardsininae (Diptera:Blephariceridae): transantarctic dispersal or relict distribution [1975, eng] **B-20010**
Zykov, I.D.
Water circulation along an Antarctica-Africa profile [1974, rus] **J-19590**
Horizontal circulation in the Drake Passage [1978, rus] **J-20636**
Current measurement by means of buoys in the Drake Passage [1978, rus] **J-20637**
Thermal structure of antarctic continental slope waters around Molodezhnaya Station [1978, rus] **J-20649**
Water mass structure and geostrophic currents on the Antarctica-Africa profile [1978, rus] **J-20650**

SUBJECT INDEX

Ablation

See under: Glacier ice; Ice; Ice sheet; Icebergs; Snow

Absorption

See under: Ionosphere. *See also:* Cosmic noise absorption; Polar cap absorption

Acclimatization

Physiological adaptation and health of an expedition in Antarctica, with comment on behavioural adaptation [1977, eng] **H-19266**
Adaptation of groups to antarctic isolation [1977, eng] **H-19345**
Acclimatization of physiological functions in Antarctica [1963, jap] **H-19441**
Clinical and biochemical studies of human adaptation in central Antarctica as applied to space biology and medicine [1977, rus] **H-19531**
Circadian rhythm in Antarctica [1975, jap] **H-20049**
Experimental use of computers for data analysis in medical geographical research [1978, rus] **H-20614**
Variations in frequency spectra on EEG's of antarctic workers [1978, rus] **H-20730**
Antiviral resistance under antarctic winter conditions [1978, rus] **H-20774**
Electroencephalography, isolation and hypnotic capability at Scott Base [1978, eng] **H-20877**
Influence of isolation on body and skin temperature [1975, eng] **H-20986**
Characteristics of the diet for wintering antarctic personnel [1975, eng] **H-20988**
Human adaptation to unusual living conditions [1978, rus] **H-21031**
Problems of adaptation and antarctic support systems [1978, rus] **H-21032**
Social and health aspects of human adaptation in polar regions [1978, rus] **H-21033**
Environment and psychophysiological aspects of human adaptation in Antarctica [1978, rus] **H-21034**
Characteristics of acclimatization [1978, rus] **H-21035**
Clinical and biochemical studies of acclimatization [1978, rus] **H-21036**
Adrenal function during acclimatization [1978, rus] **H-21037**
Cerebral blood flow adaptation to high-altitude hypoxia in Antarctic workers [1978, rus] **H-21038**
Circadian rhythm in human blood circulation in Antarctica [1978, rus] **H-21039**
Peripheral blood indicators in wintering 15th SAE personnel at Vostok [1977, rus] **H-21141**
Motor system dynamics and adaptational features in wintering antarctic personnel [1977, rus] **H-21143**
Assessing thermoregulation in wintering personnel at a coastal antarctic station [1977, rus] **H-21144**
Changing cold acclimatization patterns of men living in Antarctica [1978, eng] **H-21214**
Oxygen consumption tests for antarctic wintering over party [1978, ger] **H-21241**
Effect of antarctic conditions on blood protein [1978, rus] **H-21435**
Acclimatization of peripheral thermoregulation [1978, rus] **H-21457**
Acclimatization of cardiovascular system at sea and on land [1978, rus] **H-21458**
Human adaptation and health in Antarctica [1978, rus] **H-21707**
Human immunology under antarctic conditions [1978, rus] **H-21708**

See also: Ecology; Isolation effects; Low temperature effects

Accumulation

See under: Firn; Ice sheet; Snow

Acoustical properties

See under: Shelf ice; Snow

Administration

French southern and antarctic territories, 1772-1972 [1973, fre] **A-20241**
British Antarctic Survey [1977, eng] **A-20267**
Fifty-first annual report on the work of the Scott Polar Research Institute [1978, eng] **A-20323**
Report of the SCAR executive meeting, Cambridge, UK, 6-7 July 1977 [1978, eng] **A-20326**
Problems in the conservation of polar marine mammals [1978, eng] **B-20205**
Conservation of antarctic living marine resources [1978, eng] **B-20221**
Role of krill in the antarctic marine ecosystem [1977, eng] **B-20222**
Conservation in the Antarctic [1977, eng] **B-20275**
In for the krill [1978, eng] **B-20525**
BIOMASS [1978, eng] **B-21082**
Whaling: past, present and future [1978, eng] **B-21173**
Aspects of transporting icebergs from Antarctica to the United States [1978, eng] **F-20483**
Science Council of Japan and the JARE [1978, jap] **G-19771**
Report of Antarctic Development Squadron Six operations [1978, eng] **G-20415**
Report of Operation *Deep Freeze* 78, 1977-1978 [1978, eng] **G-20416**
Antarctic operations manual [1978, eng] **G-20778**
Operation *Deep Freeze;* Operation order No.1-79 [1978, eng] **G-20783**
Adaptation of groups to antarctic isolation [1977, eng] **H-19345**
National Atmospheric Sciences Program: Fiscal year 1969 [1968, eng] **I-20493**
Modelling the exclusive economic zone enforcement problem [1978, eng] **J-21285**
Congressional hearings on criminal acts in Antarctica [1977, eng] **M-20381**
International cooperation under the Antarctic Treaty [1978, eng] **M-20789**

Aerial photography

Glacial surface marking trials [1977, rus] **C-19579**
Some problems of photogrammetry in Antarctica [1976, eng] **C-21393**
Satellite data on snow and ice in the Arctic and Antarctic regions [1977, jap] **F-19818**
Integrated approach to the remote sensing of floating ice [1977, eng] **F-19861**
Potential application of remote sensing in locating and tracking of antarctic icebergs [1978, eng] **F-20458**
U.S. Navy global ice analysis and forecasting [1978, eng] **F-20459**
Locating icebergs + remote sensing [1978, eng] **F-20488**
U.S. Navy global ice analysis and forecasting [1978, eng] **F-20751**

Aerobiology

Summary of environmental monitoring and impact assessment of the DVDP [1978, eng] **B-19982**
Microbial life at low temperatures: ecological aspects [1978, eng] **B-21169**
Identification of some fungi from soil and air of Antarctica [1978, eng] **B-21352**
Airborne particles and electric fields near the ground in Antarctica [1978, eng] **B-21602**

Aerosols

Airborne particles and electric fields near the ground in Antarctica [1978, eng] **B-21602**
Processes responsible for the trace content in precipitation [1977, eng] **F-20111**
On the origin of mineral impurities in ice [1977, fre] **F-20112**
Precipitation-forming mechanisms [1977, eng] **F-20113**
Accumulation of snow and radioactive debris in Antarctica [1977, eng] **F-20117**

Aerosols *(cont.)*
Filtering effect of snow [1977, eng] **F-20120**
Variations in Greenland and Antarctic deep ice cores [1977, eng] **F-20128**
Snow chemistry and atmospheric processes on the Ross Ice Shelf [1978, eng] **F-20393**
Sulfate in antarctic snow [1978, eng] **F-20505**
Trace metals in antarctic snows since 1914 [1979, eng] **F-21255**
On the origins of mineral impurities in ice (Transl.) [1979, eng] **F-21262**
Influence of aerosols on geochemistry of polar snow [1978, fre] **F-21280**
Role of precipitation processes in chemistry of polar snows [1976, eng] **F-21672**
Particulate arsenic content around Showa [1977, jap] **I-19290**
Atmosphere's role in chemical composition of Ross Ice Shelf snow [1977, eng] **I-19697**
Measurements of trace gases and aerosols in the antarctic stratosphere [1977, eng] **I-19699**
Meteorological research aboard instrumented LC-130R airplane and at the South Pole [1977, eng] **I-19704**
Observations of sea-salt particles in the air in Mizuho Plateau [1978, eng] **I-19828**
Balloon observations of a particle layer injected by a stratospheric aircraft at 23 km [1978, eng] **I-20625**
Global transport rate for radioactive products and behavior of Cesium-137 in the antarctic atmosphere in 1969-70 [1977, rus] **I-20695**
Properties of the background global aerosol and their effects on climate [1976, eng] **I-20699**
Seasonal and frontal variation in antarctic aerosol concentrations [1978, eng] **I-20781**
Effects of human activities on global climate; a summary, with consideration of the implications of a possibly warmer earth [1977, eng] **I-20957**
Augustine volcano [1978, eng] **I-21050**
Determination of the chemical composition of South Pole aerosol [1977, eng] **I-21054**
Seasonal variability in the pole-to-pole modes of water vapor transport during the IGY [1978, eng] **I-21147**
Global influences of mankind on the climate [1978, eng] **I-21191**
Geophysical monitoring for climatic change, No.6. Summary report 1977 [1978, eng] **I-21405**
Trace gas and aerosol measurements to 30 km in Antarctica [1978, eng] **I-21615**
Trace elements in the antarctic atmosphere [1978, eng] **I-21616**
Geophysical monitoring for climatic change at the South Pole, 1977 [1978, eng] **I-21618**
Particles in the air at the South Pole [1978, eng] **I-21621**
Atmospheric electric measurements at the South Pole [1976, eng] **I-21663**
Iodine, bromine and chlorine in the antarctic atmosphere [1976, eng] **I-21665**
Balloon sounding the stratospheric sulfate aerosol layer [1976, eng] **I-21667**
Antarctic aerosols [1978, eng] **I-21668**
Polar aerosol-climatic implications [1976, eng] **I-21670**
Atmospheric concentrations and sources of trace metals at the South Pole [1976, eng] **I-21673**
Light intensity and polarization measurements at the South Pole [1976, eng] **K-21664**

Age determination
See under: Firn; Ice; Ice sheet; Sea ice; Sea water; Shelf ice. *See also:* Geochronology

Air
See: Atmosphere

Air masses
Snow chemistry and atmospheric processes on the Ross Ice Shelf [1978, eng] **F-20393**
Possible mechanism of meridional atmospheric circulation over Antarctica [1978, eng] **I-21613**

Aircraft
Unloading of an IL-14 aircraft onto a giant iceberg [1977, eng] **G-19409**
Research-configured LC-130R airplane [1977, eng] **G-19729**
Air operations, *Deep Freeze* '77 [1977, eng] **G-19731**
Public works, *Deep Freeze* '77 [1977, eng] **G-19732**
Aircraft salvage at dome C [1977, eng] **G-19733**
Suitability of JATO aircraft motor for antarctic use [1978, eng] **G-21123**
LC-130R research flights, 1977-78 [1978, eng] **G-21642**
Balloon observations of a particle layer injected by a stratospheric aircraft at 23 km [1978, eng] **I-20625**
Meteorological data gathered by ARDS [1978, eng] **I-21006**
See also: Navigation/Air; Transportation/Air

Airfields
Runway site survey, Pensacola Mountains, Antarctica [1977, eng] **G-19368**

Airglow
Observations carried out in the field at Kerguelen Station during the ARAKS experiment [1978, eng] **K-21426**

Albatrosses
See: Aves-Procellariiformes

Albedo
Some problems of photogrammetry in Antarctica [1976, eng] **C-21393**
Radiation budget at Plateau Station, Antarctica, 1966-1967 [1977, eng] **I-19337**
Energy balance climate models [1978, eng] **I-19990**
Heat balance of the Earth [1978, eng] **I-21189**
Climatonomical modeling of temperature response to dust contamination of antarctic snow surfaces [1977, eng] **I-21377**
Spectroscopic studies at McMurdo, South Pole, and Siple stations [1978, eng] **I-21611**
Light intensity and polarization measurements at the South Pole [1976, eng] **K-21664**
See also under: Firn; Glacier ice; Ice sheet; Snow

Algae
See: Thallophyta-Algae

Altimetry
Measurements of a barometric altitude profile in Enderby Land, Antarctica [1975, ger] **C-19502**
Accuracy of trigonometric leveling above ice at stable stratification of temperature and refraction [1975, ger] **C-19504**
Studies of barometric leveling in Antarctica [1975, ger] **C-19505**
Ice sheet topography by satellite altimetry [1978, eng] **F-20414**

Anseriformes
See: Aves-Anseriformes

Antarctic Convergence
Phytoplankton within the Antarctic Convergence [1969, eng] **B-19399**
Salinity and nutrient effects on the induction of the galactose permease system in a psychrophilic marine *Vibrio* [1978, eng] **B-21434**
Logistics and buoys in the first GARP global experiment [1978, eng] **G-20417**
Relationship between the antarctic oceanic polar front and free-atmosphere processes [1978, rus] **I-20646**
Influence of Southern Ocean on climate [1978, eng] **I-21106**
Oceanography and sedimentology of Drake Passage, Antarctica [1968, eng] **J-19270**
Distribution of antarctic intermediate waters in the world ocean [1978, eng] **J-20138**
Biogeographic aspects of the distribution and dynamics of water masses off the South American coast [1978, eng] **J-20933**

Antarctic Treaty
Antarctica. An information paper presented by Senator the Honourable J.J. Webster, Minister for Science [1977, eng] **A-19269**
Antarctic riches—for whom [1977, eng] **A-19438**
Attention on Antarctica [1977, eng] **A-19439**
Krill rush: tiny fish puts Antarctica up for grabs [1978, eng] **A-19866**
Emergence of Antarctica [1978, eng] **A-20199**
Polar research: status and prospectus [1978, eng] **A-20209**
Economic development of Antarctica [1977, eng] **A-20595**
Uses of Antarctica [1977, eng] **A-20833**

Exploiting antarctic mineral resources—technology, economics, and the environment [1978, eng] **A-21470**
International scientific research programs [1978, rus] **A-21687**
Conservation in the Antarctic [1977, eng] **B-20275**
Mineral resources and geopolitics in Antarctica [1979, eng] **E-21652**
International law problems of acquisition and transportation of antarctic icebergs [1978, eng] **F-20480**
Some international implications of iceberg transfer [1978, eng] **F-20481**
Legal/political aspects of antarctic iceberg utilization [1978, eng] **F-20482**
Report of Antarctic Treaty meeting on telecommunications [1978, eng] **G-20620**
Report on Ninth Consultative Meeting of the Antarctic Treaty [1977, eng] **M-19324**
Status of Antarctica in the light of international law [1977, eng] **M-19381**
United States antarctic policy [1978, eng] **M-19570**
[Press briefing] [1977, eng] **M-19581**
[Press briefing] [1977, eng] **M-19583**
Law of nations in polar regions [1974, ita] **M-20004**
Political and legal analysis: the Antarctic Treaty [1978, eng] **M-20151**
Legal status of the Antarctic [1976, eng] **M-20189**
Eighth Antarctic Treaty Consultative Meeting [1975, spa] **M-20250**
Report of the Ninth Antarctic Treaty Consultative Meeting, London, 1977 [1978, eng] **M-20324**
Congressional hearings on Antarctic Conservation Act [1978, eng] **M-20380**
Report of the Eighth Antarctic Treaty Consultative Meeting [1976, eng] **M-20590**
International cooperation under the Antarctic Treaty [1978, eng] **M-20789**
Antarctica: geopolitical football [1977, eng] **M-20832**
National security policy for the Antarctic [1974, eng] **M-20987**
Antarctica, the Southern Ocean, and the law of the sea [1977, eng] **M-21065**
Antarctica: conflict or compromise [1978, eng] **M-21075**
Offshore oil and gas in Antarctica [1977, eng] **M-21266**
Chilean diplomatic activities in Antarctica [1977, spa] **M-21296**
Trends and prospects for regimes for living and mineral resources in the Antarctic [1979, eng] **M-21369**
The antarctic regime: an introduction [1978, eng] **M-21468**
Recommended approach to the antarctic resource problem [1978, eng] **M-21473**
Antarctic system and the utilization of resources [1978, eng] **M-21474**
The international community and Antarctica [1978, eng] **M-21475**
Antarctica and the questions of the exploitation of its resources [1977, eng] **M-21654**

Anticyclones
See: Cyclones and anticyclones

Arachnida
See: Arthropoda-Arachnida

Arthropoda

ECOLOGY
Tardigrada and Rotifera of Signy Island [1976, eng] **B-19555**

GEOGRAPHIC DISTRIBUTION
Studies of terrestrial microarthropods on Amsterdam and St. Paul Islands. 1. Amsterdam Island: preliminary quantitative study [1973, fre] **B-19308**
Tardigrada and Rotifera of Signy Island [1976, eng] **B-19555**
Tardigrada from the Antarctic Peninsula and Scotia Ridge region [1976, eng] **B-19561**
Analysis of relationships among antarctic mesofauna and various climatic factors [1977, spa] **B-20910**

PHYSIOLOGY
Oxygen uptake of an antarctic arthropod [1977, eng] **B-20160**
Metabolic adaptations of antarctic terrestrial micro-arthropods [1978, eng] **B-21221**
Cold-hardiness of *Cryptopygus antarcticus* (Collembola) from Bouvetöya [1978, eng] **B-21243**
Cold tolerance of two antarctic terrestrial arthropods [1978, eng] **B-21244**

POPULATION
Tardigrada from the Antarctic Peninsula and Scotia Ridge region [1976, eng] **B-19561**
Populations of introduced arthropods at Australian antarctic stations [1978, eng] **B-20994**

TAXONOMY
Studies of terrestrial microarthropods on Amsterdam and St. Paul Islands. 1. Amsterdam Island: preliminary quantitative study [1973, fre] **B-19308**
Tardigrada from the Antarctic Peninsula and Scotia Ridge region [1976, eng] **B-19561**

Arthropoda-Arachnida
First record of *Ereynetes macquariensis* from Anvers Island [1977, eng] **B-19378**
Life cycle studies of some antarctic mites [1968, eng] **B-19518**

ECOLOGY
Population density of free-living mites in ice-free areas [1977, eng] **B-19524**
Evolution of the family Ameronothridae (Acari: Oribatei) 2. Ecological aspects [1977, eng] **B-19749**
Terrestrial arthropods, Marie Byrd Land, Antarctica [1978, eng] **B-21604**

EVOLUTION
Evolution of the family Ameronothridae (Acari:Oribatei) 1. Morphological aspects [1977, eng] **B-19748**

GEOGRAPHIC DISTRIBUTION
Mites around Showa [1977, jap] **B-19305**
Subantarctic mites [1976, fre] **B-20056**

MORPHOLOGY
Size of an antarctic mite shows geographic variation [1978, eng] **B-20075**
Redescription of *Nanorchestes bifurcatus* [1978, eng] **B-21179**

PHYSIOLOGY
Oxygen consumption of *Alaskozetes antarcticus* [1977, eng] **B-19482**

POPULATION
Population density of free-living mites in ice-free areas [1977, eng] **B-19524**

TAXONOMY
Subantarctic mites [1976, fre] **B-20056**
Catalog of Magellanic and Chilean antarctic Arachnida [1976, spa] **B-20836**
Catalog of entomological types in the Bishop Museum [1978, eng] **B-20995**
Prostigmate mites from Dronning Maud Land [1977, eng] **B-21229**

Arthropoda-Crustacea
AKP unit for producing protein paste from krill [1972, rus] **A-19847**
Methods of Soviet krill fisheries [1974, ger] **A-20939**
News about krill [1974, ger] **A-20940**
News about krill Pt.2 [1975, ger] **A-20941**
First krill expedition of the Federal Republic of Germany to antarctic waters [1975, ger] **A-20942**
First segment of the Antarctic Expedition completed [1976, ger] **A-20962**
First information about the second segment of the antarctic voyage [1976, ger] **A-20963**
First German krill expedition to the Antarctic completed [1976, ger] **A-20964**
Fishing gear techniques to catch krill and fish in the Scotia Sea [1978, ger] **A-21449**
On the biological value of krill paste [1971, rus] **B-19410**
Chemical changes in boiled antarctic krill [1976, jap] **B-19447**
Manufacture of krill protein concentrate [1977, jap] **B-19511**
Studies on proteases from antarctic krill [1977, jap] **B-19512**
Antarctic krill resource: prospects for commercial exploitation [1978, eng] **B-19864**
Evaluation of possible United States involvement in an antarctic krill fishery [1976, eng] **B-19895**

Arthropoda-Crustacea *(cont.)*

Potential impact of harvesting zooplankton on the south circumpolar ecosystem [1978, eng] **B-19985**
Krill meal as poultry feed [1976, rus] **B-19994**
Dissimilar and similar trends in antarctic and arctic marine benthos [1977, eng] **B-20040**
Amphipods and polychaetes of both polar oceans compared [1977, eng] **B-20042**
Role of krill in the antarctic marine ecosystem [1977, eng] **B-20222**
Bibliography of antarctic krill [1977, eng] **B-20242**
Antarctic krill—food for the future [1975, ger] **B-20290**
Bacterial flora of antarctic krill [1978, eng] **B-20504**
Analysis of krill, krill products and antarctic fish species [1977, ger] **B-20557**
Phylogeny of the family Calanidae (Copepoda) on the basis of a comparative morphological analysis of its characters [1975, eng] **B-20669**
Seasonal plankton variations [1975, eng] **B-20672**
More about krill [1978, eng] **B-20716**
Notes on some fishes associated with the antarctic krill. 1. *Neopagetopsis ionah* Nybelin [1978, eng] **B-20825**
Zooplankton fisheries of the world: a review [1978, eng] **B-20831**
Harvesting: ecological and energy considerations [1978, eng] **B-21081**
BIOMASS [1978, eng] **B-21082**
Life below the Ross Ice Shelf, Antarctica [1979, eng] **B-21101**
Fish, crustaceans, and the sea floor under the Ross Ice Shelf [1979, eng] **B-21102**
Research and exploration of the resources of krill and food fish in the Antarctic. Report on the 1975/76 Antarctic Expedition of the Federal Republic of Germany [1977, ger] **B-21118**
Antarctic fisheries [1978, eng] **B-21151**
Ecological interactions in the Southern Ocean [1979, eng] **B-21225**
Development of concentrated protein food material from antarctic krill [1977, eng] **B-21232**
Dehydration effects on krill protein [1978, chi] **B-21249**
Chemical composition of the exoskeleton of antarctic krill [1975, jap] **B-21276**
Length-weight correlation in antarctic krill, *Euphausia superba* [1978, ger] **B-21346**
Antarctic marine living resources with special reference to krill *Euphausia superba:* assessment of adequacy of present knowledge [1978, eng] **B-21492**
Calanoid copepods (Aetideidae and Euchaetidae) from antarctic and subantarctic waters [1978, eng] **B-21494**
Biological studies of antarctic krill, austral summer, 1977-1978 [1978, eng] **B-21581**
Course of the Antarctic Expedition of the Federal Republic of Germany [1978, ger] **D-21444**
Fossil occurrence of *Jacquinotia edwardsii* [1977, eng] **E-19466**

BEHAVIOR

Behaviour of krill in photic and electrical fields [1970, eng] **B-20383**
Observations on krill in a zone of artificial illumination [1970, eng] **B-20385**
Observations of krill on a Russian vessel [1970, eng] **B-20386**
Echosounding for the vertical distribution of antarctic krill [1978, ger] **B-21448**
Behavior of krill *(Euphausia superba* Dana) [1978, ger] **B-21450**

BREEDING CYCLES AND REPRODUCTION

Euphausiid distribution and reproduction in the Scotia Sea [1978, eng] **B-20139**
Euphausia superba Dana (Crustacea:Euphausiacea) reproduction [1976, rus] **B-20395**
Fecundity of crustaceans along the Davis Sea shores [1978, rus] **B-21436**

ECOLOGY

Eubrachiella antarctica on some antarctic fish [1977, eng] **B-20558**
Micronekton and zooplankton [1978, ger] **B-21446**
Antarctic krill: ecology and commercial exploitation [1978, eng] **B-21582**
On the examination against the parasites of antarctic krill, *Euphausia superba* [1978, eng] **B-21650**
Antarctic expedition of 1977-1978 in preparation [1977, ger] **D-20974**

EXPLOITATION

Krill—an immense but vulnerable source of protein [1971, eng] **A-20058**
Exploitation of krill [1973, eng] **A-20072**
Prospects for the utilization of krill [1973, eng] **A-20073**
To Antarctica on the *Tazar* [1977, pol] **A-20166**
Using krill meal as feed [1966, rus] **A-20869**
International interest in krill takes on keener edge with new developments [1978, eng] **A-21160**
Krill meal and other protein sources as substitutes of fishmeal in rainbow trout diets: sensory investigations of influences on eating quality and shelf life [1978, ger] **A-21220**
Evaluation of krill meal as protein feed [1978, ger] **A-21253**
Harvesting of krill [1977, eng] **B-20002**
Utilization of krill [1977, eng] **B-20003**
Conservation of antarctic living marine resources [1978, eng] **B-20221**
Research on krill [1978, ger] **B-20287**
Effect of a new food product, krill paste, on chemical carcinogenesis [1976, rus] **B-20431**
Some ways of increasing the world ocean bioproductivity [1977, eng] **B-20512**
In for the krill [1978, eng] **B-20525**
Experiments in making sausages from krill [1978, eng] **B-20526**
Utilization of krill shells in feeding experiments with rats [1978, ger] **B-20560**
Krill as human food [1973, rus] **B-20612**
Amino acid content of krill and krill meal [1970, rus] **B-20819**
Using dehydrated "Okean" protein paste in foods [1976, rus] **B-20821**
Convenient assay method for protease of the antarctic krill using paper disks [1978, jap] **B-20943**
Shrimps offer a whale of a catch [1978, eng] **B-21219**
Biochemical studies on marine zooplankton. 12. Further investigations on *Euphausia superba* Dana [1974, eng] **B-21251**
Variability in protein and fat content of krill *(Euphausia superba* Dana) [1978, ger] **B-21345**
Changes in krill paste after cooking [1977, rus] **B-21437**
Processing and product development [1978, ger] **B-21451**
Marine living resources of the Southern Ocean [1978, eng] **B-21471**
Antarctic krill: ecology and commercial exploitation [1978, eng] **B-21582**

GEOGRAPHIC DISTRIBUTION

Research and exploration of the resources of krill and food fish in the Antarctic [1977, eng] **A-19515**
Space conference in Konstanz—Scientific results on fisheries [1973, ger] **A-20938**
Krill catch in the Atlantic sector of the Antarctic [1977, ger] **A-20968**
New species of shrimp, *Pasiphaea grandicula,* and a short outline of species of the genus [1976, rus] **B-19574**
Cladocera, Ostracoda, and freshwater Copepoda [1967, eng] **B-19956**
Euphausiid distribution and reproduction in the Scotia Sea [1978, eng] **B-20139**
Effect of hydrological conditions in the Scotia Sea on aggregations of baleen whales [1973, rus] **B-20584**
Taxonomy and distribution of planktonic ostracods [1978, eng] **B-20853**
Arthropods of Doumer Island, Antarctic Peninsula [1977, spa] **B-20912**
Diurnal migration of antarctic krill [1976, ger] **B-20965**
Estimation of antarctic krill in the Atlantic [1977, ger] **B-20975**
Northern limits of antarctic krill [1976, spa] **B-21010**
Latitudinal distribution of krill [1976, spa] **B-21011**
Larval krill *(Euphausia superba)* in the plankton and neuston samples of the German Antarctic Expedition 1975-76 [1978, eng] **B-21344**
Krill and hydrographic conditions off the Antarctic Peninsula [1978, eng] **B-21348**
Paleodistribution of marine isopods and continental drift [1979, eng] **B-21394**
Contribution to the knowledge of the Decapod Crustacea of Tierra del Fuego with some zoogeographical observations [1977, spa] **B-21429**
Antarctic Expedition 1975-1976 of the Federal Republic of Germany [1978, ger] **B-21443**

Micronekton and zooplankton [1978, ger] **B-21446**
Fishery biological investigations [1978, ger] **B-21447**
Echosounding for the vertical distribution of antarctic krill [1978, ger] **B-21448**
Chlamys delicatula and *Jacquinotia edwardsii* [1977, eng] **E-19465**

MIGRATION
Behavior of krill *(Euphausia superba* Dana) [1978, ger] **B-21450**

MORPHOLOGY
New species of shrimp, *Pasiphaea grandicula,* and a short outline of species of the genus [1976, rus] **B-19574**
Parasitic Copepoda of fishes [1965, eng] **B-19955**
Copepod from the Antarctic Peninsula is redescribed [1978, eng] **B-20086**
Geographical variability of some species of the family Oithonidae (Copepoda, Cyclopoida) [1975, eng] **B-20670**
Structure of the mandibles in the genus *Calanus* s.l. in relation to latitudinal zonality [1975, eng] **B-20671**
Contribution to the knowledge of antarctic decapods [1976, spa] **B-21013**
Morphology and description a crustacean genus [1978, rus] **B-21440**

NUTRITION
Fermented alkane and krill meal as a fish meal substitute in trout fodder [1977, ger] **B-20969**
Quality and tastiness of antarctic fish [1977, ger] **B-20971**
Effect of krill stomach content on quality of krill paste [1977, ger] **B-20977**
Changes in krill paste after cooking [1977, rus] **B-21437**
Processing of krill [1976, ger] **G-20967**
Quality of preservation of antarctic fish and krill products [1977, ger] **G-20972**
Analysis of moisture retention in krill paste [1977, ger] **G-20973**
Measuring moisture in krill meal [1977, ger] **G-20976**
Assimilation by the organism of aminoacids of the protein product paste "Ocean" [1974, rus] **H-20866**

PHYSIOLOGY
Yttrium-90 absorption by krill [1977, eng] **B-19276**
Lipid composition of *Chorismus antarcticus* [1977, eng] **B-19471**
Antarctic marine secondary production and the phenomenon of cold adaptation [1977, eng] **B-19473**
Some observations on krill *(Euphausia superba* Dana) maintained alive in the laboratory [1976, eng] **B-19554**
Physiology and biochemistry of low temperature adaptations in polar marine ectotherms [1978, eng] **B-20206**
Summer respiration of an antarctic amphipod [1973, eng] **B-20218**
Chemical composition of *Paramoera walkeri* [1974, eng] **B-20219**
Respiration of invertebrates and fishes under hypostenothermic conditions [1975, eng] **B-20220**
Convenient assay method for protease of the antarctic krill using paper disks [1978, jap] **B-20943**
Biochemical studies on marine zooplankton. 12. Further investigations on *Euphausia superba* Dana [1974, eng] **B-21251**

POPULATION
Research and exploration of the resources of krill and food fish in the Antarctic [1977, eng] **A-19515**
Krill catch in the Atlantic sector of the Antarctic [1977, ger] **A-20968**
Production of lobsters in the waters of Saint Paul and Amsterdam Islands [1977, eng] **B-20044**
Fecundity of crustaceans along the Davis Sea shores [1978, rus] **B-21436**
Antarctic Expedition 1975-1976 of the Federal Republic of Germany [1978, ger] **B-21443**
Micronekton and zooplankton [1978, ger] **B-21446**
Fishery biological investigations [1978, ger] **B-21447**
Seasonal and annual variations in water temperature and salinity near South Georgia, 1925-1937 [1977, eng] **J-20617**

TAXONOMY
New species of shrimp, *Pasiphaea grandicula,* and a short outline of species of the genus [1976, rus] **B-19574**
Parasitic Copepoda of fishes [1965, eng] **B-19955**
Copepod from the Antarctic Peninsula is redescribed [1978, eng] **B-20086**
Revision of the genera *Ambasiopsis* K.H. Barnard and *Neoambasia* Dahl (Crustacea, Amphipoda) [1977, fre] **B-20155**
Tardigrada of New Zealand [1978, eng] **B-20549**
Nonasellote isopod crustaceans from Anvers Island and other antarctic locations [1978, eng] **B-20852**
Taxonomy and distribution of planktonic ostracods [1978, eng] **B-20853**
Arthropods of Doumer Island, Antarctic Peninsula [1977, spa] **B-20912**
Occurrence of *Paralabidocera antarctica* (I.C. Thompson) (Copepoda: Calanoida: Acartiidae) in an antarctic saline lake [1978, eng] **B-21351**
New species of marine isopod of the genus *Antarcturus* (Isopoda, Valvifera) from the South Orkney Islands [1979, eng] **B-21371**
New species of copepods of the genus *Calocalanus* from the Indian sector of the Antarctic and the South Atlantic [1978, eng] **B-21401**
Morphology and description a crustacean genus [1978, rus] **B-21440**
New species of *Acanthonotozomella* from the Davis Sea (East Antarctica) [1978, rus] **B-21441**
Late Cambrian Brachiopoda, Mollusca, and Trilobita from northern Victoria Land, Antarctica [1976, eng] **E-20142**
Ostracoda from the Taylor Formation, the Ross Sea, and the McMurdo Sound region [1978, eng] **E-21518**

Arthropoda-Insecta

ECOLOGY
Springtails from Signy Island [1978, eng] **B-21402**

GEOGRAPHIC DISTRIBUTION
Edwardsininae (Diptera:Blephariceridae): transantarctic dispersal or relict distribution [1975, eng] **B-20010**

NUTRITION
Springtails from Signy Island [1978, eng] **B-21402**

PHYSIOLOGY
Cold tolerance of two antarctic terrestrial arthropods [1978, eng] **B-21244**
Strategies of low-temperature survival in an antarctic insect [1978, eng] **B-21395**
Physiological basis of low temperature tolerance in antarctic insects [1978, eng] **B-21603**

TAXONOMY
Philotarsidae (Psocoptera) of New Zealand and islands of the New Zealand Plateau [1977, eng] **B-19268**
Revision of the New Zealand Chloropidae [1977, eng] **B-19814**
New Zealand Diapriinae [1978, eng] **B-20543**
New apteran Sphaerocerid from the Crozet Islands [1975, fre] **B-20841**

Astronomy
Determining an astronomical reference point at Molodezhnaya Station, Antarctica [1978, rus] **K-21378**

Atmosphere
Radar and satellite communications system at Palmer Station [1978, eng] **G-19757**
Study of the climate of the Kerguelen Islands and subantarctic region of the Indian Ocean. Climatology of Port-aux-Français [1977, fre] **I-19464**
Meteorological research in the Arctic and Antarctic during the Soviet regime [1977, rus] **I-19587**
Full-scale and model studies of nonlinear factors in baroclinic motion: a problem for the POLEX-South program [1977, eng] **I-19790**
Antarctic atmosphere as seen by satellites [1977, eng] **I-20283**
Problems of antarctic meteorology [1978, rus] **I-20678**
Atmospheric ice crystals at the South Pole in summer [1978, eng] **I-21609**
Report of polar meteorology workshop, Reno, Nevada, 1975 [1976, eng] **I-21660**
State of the art and future prospects for antarctic meteorological research [1978, rus] **I-21691**
Radio wave Doppler studies of the antarctic ionosphere [1977, eng] **K-19478**
Importance of the Antarctic in atmospheric sciences [1977, eng] **K-19480**
Auroral infrasonic waves observed at Windless Bight, Antarctica [1977, eng] **K-19724**

Atmosphere *(cont.)*

See also: Ionosphere; Mesosphere; Stratosphere; Tropopause; Troposphere; Upper air

CHEMISTRY

Investigating atmospheric aerosol transfer by means of geochemical study of the antarctic ice sheet [1976, rus] **F-19285**

Investigations at dome C in the austral summer of 1976-1977 [1977, eng] **F-19678**

West Antarctic ice sheet and CO2 greenhouse effect: a threat of disaster [1978, eng] **F-19878**

Non-biogenic fixed nitrogen in Antarctica and some ecological implications [1978, eng] **F-19915**

Composition of gas contained in polar ice [1977, fre] **F-20129**

Trace metals in antarctic snows since 1914 [1979, eng] **F-21255**

Human body burdens of cesium-137 and potassium-40 [1977, jap] **H-19301**

Particulate arsenic content around Showa [1977, jap] **I-19290**

Sulfur dioxide and fall dust at Showa in summer [1977, jap] **I-19291**

Comparability of CO2 measurements [1977, eng] **I-19338**

Atmospheric trace gases in the southern hemisphere [1973, eng] **I-19484**

Effects of human activities on global climate [1977, eng] **I-19491**

Analysis of halocarbons in Antarctica [1977, eng] **I-19696**

Atmospheric electric measurements at the South Pole: the krypton-85 question [1977, eng] **I-19698**

Measurements of trace gases and aerosols in the antarctic stratosphere [1977, eng] **I-19699**

Carbon dioxide reference and gas and air analysis [1962, eng] **I-19744**

Atmospheric radiocarbon on subantarctic islands and Halley Bay [1970, eng] **I-19844**

Radiocarbon studies of atmospheric CO2 [1972, eng] **I-19845**

Increase in atmospheric radiocarbon 1959-1969 [1973, eng] **I-20069**

Is mankind warming the Earth [1978, eng] **I-20105**

Trace metals in the antarctic atmosphere [1974, eng] **I-20224**

Atmospheric distribution of nitrous oxide [1977, eng] **I-20498**

Atmospheric HT and HTO, Part 4 [1977, eng] **I-20499**

Radioactive air pollution in the southern hemisphere [1977, rus] **I-20694**

Study of the lower stratospheric thermal stucture and total ozone from Nimbus-4 IRIS [1976, eng] **I-20786**

Global temperature variation, surface-100 mb: an update into 1977 [1978, eng] **I-20883**

Effects of human activities on global climate; a summary, with consideration of the implications of a possibly warmer earth [1977, eng] **I-20957**

Augustine volcano [1978, eng] **I-21050**

Determination of the chemical composition of South Pole aerosol [1977, eng] **I-21054**

Stratospheric NO2 in the antarctic winter [1978, eng] **I-21171**

Stratospheric measurements of methane at several latitudes [1978, eng] **I-21172**

Global influences of mankind on the climate [1978, eng] **I-21191**

Measurement of carbon tetrafluoride in the atmosphere [1979, eng] **I-21254**

Geophysical monitoring for climatic change, No.6. Summary report 1977 [1978, eng] **I-21405**

Global and regional N20 measurements [1978, eng] **I-21481**

Vertical ozone distribution on a global scale [1978, eng] **I-21482**

Trace gas and aerosol measurements to 30 km in Antarctica [1978, eng] **I-21615**

Trace elements in the antarctic atmosphere [1978, eng] **I-21616**

Antarctic tritium measurements [1978, eng] **I-21617**

Geophysical monitoring for climatic change at the South Pole, 1977 [1978, eng] **I-21618**

Halocarbon and N2O analyses in Antarctica [1978, eng] **I-21619**

Iodine, bromine and chlorine in the antarctic atmosphere [1976, eng] **I-21665**

Atmospheric concentrations and sources of trace metals at the South Pole [1976, eng] **I-21673**

Non-biogenic fixed nitrogen in antarctic surface waters [1978, eng] **J-20991**

Direct observation of the oceanic CO2 increase [1978, eng] **J-21170**

Long-term global sea surface temperature fluctuations and their possible influence on atmospheric CO2 concentrations [1978, eng] **J-21480**

CIRCULATION

Ice crystals in the Antarctic atmosphere [1976, eng] **F-20307**

Snow chemistry and atmospheric processes on the Ross Ice Shelf [1978, eng] **F-20393**

Fluctuations and trends in indices of the southern hemispheric circulation [1975, eng] **I-19273**

Basic features of Antarctic climate and weather [1977, rus] **I-19567**

A cold, low-level jet stream in the Bransfield Strait [1977, eng] **I-19705**

POLEX and global atmospheric circulation research [1977, eng] **I-19786**

On the role of cosmogeophysical forces in polar hydrometeorological processes [1977, eng] **I-19787**

Observations of sea-salt particles in the air in Mizuho Plateau [1978, eng] **I-19828**

Atmospheric processes in the southern hemisphere [1977, rus] **I-19883**

Seasonal climatic variability over the southern oceans [1977, eng] **I-20076**

Temperature and wind velocity variations in the winter polar mesosphere [1974, eng] **I-20135**

Role of the polar regions in global climate change [1978, eng] **I-20202**

Southern hemisphere tropospheric circulation and India's summer monsoon [1978, eng] **I-20387**

Methods and results of the gradient and micropulsation measurements of air temperature and wind velocity [1977, rus] **I-20427**

Synoptic patterns and weather at McMurdo [1977, eng] **I-20492**

Antarctic polar front in the Drake Passage [1978, rus] **I-20638**

Features of atmospheric processes over the Drake Passage and nearby portions of the Southern Ocean, summer 1976 [1978, rus] **I-20642**

Summer turbulent atmosphere-ocean exchange in the Drake Passage in 1976 [1978, rus] **I-20643**

Relationship between the antarctic oceanic polar front and free-atmosphere processes [1978, rus] **I-20646**

Zonal mean characteristics of wind speed in the southern hemisphere [1978, rus] **I-20647**

Meteorological problems of the Southern Ocean [1978, rus] **I-20718**

Wind regime features on Deception Island [1978, rus] **I-20728**

Results of a vertical atmospheric profile on the Bellingshausen-Molodezhnaya route (Nov. 1973) [1978, rus] **I-20741**

Pilot study of concomitant changes in total ozone and atmospheric general circulation [1978, eng] **I-21004**

Trends of winter temperature in the Southern Hemisphere [1978, eng] **I-21111**

Seasonal variability in the pole-to-pole modes of water vapor transport during the IGY [1978, eng] **I-21147**

Measurements of surface ozone at Mirnyy, Antarctica [1978, ger] **I-21290**

Observed zonal wind cycle in the southern hemisphere stratosphere [1979, eng] **I-21314**

Northern and Southern Hemisphere differnces in pressure and temperature [1978, eng] **I-21341**

Using macrocirculation to produce experimental three-day weather and pressure field forecasts for Antarctica [1978, rus] **I-21455**

Tropospheric jet streams in Antarctica [1978, rus] **I-21456**

Light transmission and its modification by the inversion and general circulation of the antarctic atmosphere [1973, eng] **I-21493**

Possible mechanism of meridional atmospheric circulation over Antarctica [1978, eng] **I-21613**

Atmospheric acoustic echo sounding investigations at the South Pole [1976, eng] **I-21666**

POLEX-South program in 1975 and 1976 [1978, rus] **J-20634**

Circulation features of the Antarctic atmosphere and the Southern Ocean [1978, rus] **K-21694**

CURRENTS

Atmospheric acoustic echo sounding investigations at the South Pole [1976, eng] **I-21666**

DISTURBANCES

Fluctuations and trends in indices of the southern hemispheric circulation [1975, eng] **I-19273**

Methods and results of the gradient and micropulsation measurements of air temperature and wind velocity [1977, rus] **I-20427**
See also: Cyclones and anticyclones

ELECTRICITY
Airborne particles and electric fields near the ground in Antarctica [1978, eng] **B-21602**
Atmospheric electric measurements at the South Pole: the krypton-85 question [1977, eng] **I-19698**
Antarctic meteorological data. Special volume [1978, eng] **I-19945**
Atmospheric electric measurements at the South Pole [1976, eng] **I-21663**
Electron precipitation associated with very low frequency chorus and thunderstorm electric fields [1977, eng] **K-19712**
Dynamo origin of electric fields in the plasmasphere [1978, eng] **K-20501**
On the relationship of 3mHz (Pc5) electric, magnetic, and particle variations [1978, eng] **K-20623**
Initial results of rocket studies of charged particle streams in Antarctica [1978, rus] **K-20766**
Observing plan of wave normal direction of auroral VLF emissions [1978, eng] **K-20955**
Whistler observations of substorm electric fields in the nightside plasmasphere [1978, eng] **K-21059**
Stratospheric electric fields [1979, eng] **K-21133**
Atmospheric electricity and solar magnetism at Vostok [1978, rus] **K-21461**

OPTICAL PHENOMENA
Optical effects resulting from airborne ice crystals [1977, eng] **F-19703**
Atmospheric halos [1978, eng] **I-19941**
Polarizing radiometer measurements of skylight at South Pole station, Antarctica [1977, eng] **I-20899**
Dry ice = Antarctica [1978, eng] **I-21077**
Light transmission and its modification by the inversion and general circulation of the antarctic atmosphere [1973, eng] **I-21493**
Optical diagnostics of the August 1972 PCA event [1976, eng] **K-20509**
High sensitivity optical equipment for detection of weak luminous objects [1978, eng] **K-21422**
Modulation photometer used in ARAKS experiment [1978, eng] **K-21423**
Wave-induced particle precipitation effects at Siple Station [1978, eng] **K-21628**
Light intensity and polarization measurements at the South Pole [1976, eng] **K-21664**

POLLUTION
Chemical composition of an antarctic snow profile [1973, eng] **F-20055**
Chemical elements in snow in various locations [1978, eng] **F-20882**
Trace metals in antarctic snows since 1914 [1979, eng] **F-21255**
Trace metals in the antarctic atmosphere [1974, eng] **I-20224**
Radioactive air pollution in the southern hemisphere [1977, rus] **I-20694**
Global transport rate for radioactive products and behavior of Cesium-137 in the antarctic atmosphere in 1969-70 [1977, rus] **I-20695**
Long-term effect on the ozone layer of nitrogen oxides produced by thermonuclear explosions in the atmosphere [1978, eng] **I-21275**
Global and regional N20 measurements [1978, eng] **I-21481**
Atmospheric concentrations and sources of trace metals at the South Pole [1976, eng] **I-21673**
Light intensity and polarization measurements at the South Pole [1976, eng] **K-21664**

PRESSURE
Glaciological survey in 1976-1977 [1978, eng] **F-20077**
Fluctuations and trends in indices of the southern hemispheric circulation [1975, eng] **I-19273**
Meteorological data at Mizuho Camp, Antarctica in 1976-1977 [1977, eng] **I-19360**
Automatic Weather Station in Antarctica [1977, eng] **I-19362**
Meteorological observations at Showa, 1974 [1977, eng] **I-19526**
A cold, low-level jet stream in the Bransfield Strait [1977, eng] **I-19705**
Seasonal variations of meteorological elements at Mizuho Plateau [1978, eng] **I-19829**
Atmospheric processes in the southern hemisphere [1977, rus] **I-19883**
Surface temperature and sea-level pressure at Norway Station and Sanae [1976, eng] **I-19901**
Antarctic meteorological data, 1975 [1975, eng] **I-19943**
Antarctic meteorological data, 1976 [1976, eng] **I-19944**
Seasonal climatic variability over the southern oceans [1977, eng] **I-20076**
Surface atmospheric tides in New Zealand [1977, eng] **I-20186**
Satellite cloud cover data for refining Southern Hemisphere upper air charts [1975, rus] **I-20545**
Description of the geostrophic wind in the southern hemisphere [1974, eng] **I-20597**
Satellite cloud mosaics for the Southern Hemisphere [1978, eng] **I-20884**
Meteorological data at Mizuho Station, Antarctica in 1977-1978 [1978, eng] **I-20999**
Antarctic 500-mb and ground level conditions [1977, rus] **I-21139**
Using macrocirculation to produce experimental three-day weather and pressure field forecasts for Antarctica [1978, rus] **I-21455**
Long-term global sea surface temperature fluctuations and their possible influence on atmospheric CO2 concentrations [1978, eng] **J-21480**
Air temperature and pressure in relation to gravity in Central Antarctica [1976, eng] **L-20684**

RADIOACTIVITY
Measurement of argon isotopes in air samples and comparison with computations from a model [1973, ger] **I-19344**
Atmospheric radiocarbon on subantarctic islands and Halley Bay [1970, eng] **I-19844**
Radiocarbon studies of atmospheric CO2 [1972, eng] **I-19845**

STRUCTURE
Acoustic sounder operations at South Pole Station [1977, eng] **I-19702**
Free-atmosphere energy characteristics over the Drake Passage in the summer of 1976 [1978, rus] **I-20644**
Study of the lower stratospheric thermal stucture and total ozone from Nimbus-4 IRIS [1976, eng] **I-20786**
Satellite cloud mosaics for the Southern Hemisphere [1978, eng] **I-20884**
Air temperature and two-dimensional wind profiles in the lowest 32 meters as a function of bulk stability [1977, eng] **I-20934**
Stability-related wind spiraling in the lowest 32 meters [1977, eng] **I-20935**
Variations of temperature and air motion in the 0- to 32-meter layer at Plateau Station, Antarctica [1977, eng] **I-20936**
Seasonal variability in the pole-to-pole modes of water vapor transport during the IGY [1978, eng] **I-21147**
U.S. contribution to the Polar Experiment (POLEX). Part 1. POLEX-GARP (North). Part 2. POLEX-GARP (South) [1974, eng] **I-21467**
Atmospheric acoustic echo sounding investigations at the South Pole [1976, eng] **I-21666**

TEMPERATURE
Measurements of a barometric altitude profile in Enderby Land, Antarctica [1975, ger] **C-19502**
Accuracy of trigonometric leveling above ice at stable stratification of temperature and refraction [1975, ger] **C-19504**
Studies of barometric leveling in Antarctica [1975, ger] **C-19505**
Some problems of photogrammetry in Antarctica [1976, eng] **C-21393**
Glaciological studies in Mizuho Plateau, East Antarctica, 1969-1975 [1978, eng] **F-19819**
Accumulation and ablation at Syowa Station [1978, eng] **F-19830**
Oxygen isotopic composition of the surface snow in Mizuho Plateau [1978, eng] **F-19838**
West Antarctic ice sheet and CO2 greenhouse effect: a threat of disaster [1978, eng] **F-19878**
Factors controlling oxygen isotopic composition of fallen snow in Antarctica [1978, eng] **F-19880**
Glaciological survey in 1976-1977 [1978, eng] **F-20077**
Atmospheric surface layer over bare ice in the Yamato Mountains [1978, jap] **F-20083**
Energy balance at two stations of the Ampère Glacier, Kerguelen Islands [1978, fre] **F-20734**

Atmosphere

TEMPERATURE *(cont.)*

Time limit for outdoor activity in Antarctica as a function of wind speed and air temperature [1978, rus] **H-21046**

Radiation budget at Plateau Station, Antarctica, 1966-1967 [1977, eng] **I-19337**

New data on climatic trends [1977, eng] **I-19343**

Meteorological data at Mizuho Camp, Antarctica in 1976-1977 [1977, eng] **I-19360**

Automatic Weather Station in Antarctica [1977, eng] **I-19362**

Meteorological phenomena in Antarctica [1963, jap] **I-19444**

Deviations of atmospheric temperature data over Antarctica [1977, eng] **I-19459**

Temperature profiles from satellite radiation data for Europe and Antarctica [1977, hun] **I-19492**

Acoustic sounder operations at South Pole Station [1977, eng] **I-19702**

Wind chill index as applied to three Chilean antarctic bases [1972, spa] **I-19794**

Vertical structure of katabatic winds in Mizuho Plateau [1978, eng] **I-19826**

Seasonal variations of meteorological elements at Mizuho Plateau [1978, eng] **I-19829**

Soviet antarctic data on temperature, humidity, and wind speed [1977, rus] **I-19842**

Surface temperature and sea-level pressure at Norway Station and Sanae [1976, eng] **I-19901**

Antarctic meteorological data, 1975 [1975, eng] **I-19943**

Antarctic meteorological data, 1976 [1976, eng] **I-19944**

Seasonal climatic variability over the southern oceans [1977, eng] **I-20076**

Temperature and wind velocity variations in the winter polar mesosphere [1974, eng] **I-20135**

Methods and results of the gradient and micropulsation measurements of air temperature and wind velocity [1977, rus] **I-20427**

Relationship between the antaretic oceanic polar front and free-atmosphere processes [1978, rus] **I-20646**

Spatial distribution of 10 m temperatures in the Antarctic Peninsula [1978, eng] **I-20653**

Study of the lower stratospheric thermal stucture and total ozone from Nimbus-4 IRIS [1976, eng] **I-20786**

Global temperature variation, surface-100 mb: an update into 1977 [1978, eng] **I-20883**

Global distribution of the annual and semiannual cycles in surface temperature [1978, eng] **I-20885**

Air temperature and two-dimensional wind profiles in the lowest 32 meters as a function of bulk stability [1977, eng] **I-20934**

Variations of temperature and air motion in the 0- to 32-meter layer at Plateau Station, Antarctica [1977, eng] **I-20936**

Meteorological data at Mizuho Station, Antarctica in 1977-1978 [1978, eng] **I-20999**

Pilot study of concomitant changes in total ozone and atmospheric general circulation [1978, eng] **I-21004**

Trends of winter temperature in the Southern Hemisphere [1978, eng] **I-21111**

Antarctic 500-mb and ground level conditions [1977, rus] **I-21139**

Heat balance of the Earth [1978, eng] **I-21189**

Northern and Southern Hemisphere differnces in pressure and temperature [1978, eng] **I-21341**

Boundary layer research at South Pole Station using acoustic remote sensing [1978, eng] **I-21612**

Surface energy balance measurements at the South Pole [1976, eng] **I-21662**

Variability of the antarctic polar frontal zone [1978, eng] **J-20532**

Climatic characteristics of the Antarctic Polar Front Zone [1978, eng] **J-20707**

Long-term global sea surface temperature fluctuations and their possible influence on atmospheric CO2 concentrations [1978, eng] **J-21480**

Surface layer kinematics of the circumpolar current as inferred from Nimbus 6 [1978, eng] **J-21546**

Results of several years of study of low-frequency radiation in the antarctic atmosphere [1978, rus] **K-21692**

Air temperature and pressure in relation to gravity in Central Antarctica [1976, eng] **L-20684**

Atmospheric physics

Discussion on scientific research in Antarctica [1977, eng] **A-20272**

INSTRUMENTS

LABEL, Upper Atmosphere Physics Laboratory, General Belgrano Station [1973, eng] **G-19951**

American ham operator at Mirnyy [1979, eng] **G-21711**

Dual coherent auroral radar observations from Siple Station, Antarctica [1977, eng] **K-19713**

Rocket measurements of energy deposition in the atmosphere by auroral X-rays [1977, eng] **K-19721**

Records of radio aurora at Syowa Station, Antarctica in 1976 [1978, eng] **K-20091**

Drift of auroral radar echoes [1978, eng] **K-20183**

Upper atmosphere research in Antarctica [1978, eng] **K-20291**

Energetic particle precipitation from the magnetosphere [1978, eng] **K-20293**

Controlled wave-particle interaction experiments [1978, eng] **K-20295**

Studies of geomagnetic pulsations [1978, eng] **K-20296**

Direction finder for whistler mode signals [1978, eng] **K-20502**

Unmanned geophysical observatory for antarctic operation [1972, eng] **K-20555**

Auroral x-rays in conjugate regions [1970, eng] **K-20698**

Proceedings of the Second Symposium on Rocket Experiments in Antarctica [1978, eng] **K-20947**

Precipitating electrons observed by sounding rockets [1978, eng] **K-20950**

Rocket observation of keV electron fluxes at Syowa Station [1978, eng] **K-20951**

Modified electron spectrometer for medium energy [1978, eng] **K-20952**

Stanford University VLF wave injection experiment on the ISEE-A spacecraft [1978, eng] **K-21234**

The ARAKS project [1978, eng] **K-21408**

Payloads for rockets in atmospheric physics [1978, eng] **K-21409**

Electron accelerator for ARAKS [1978, eng] **K-21410**

Caesium plasma source for the ARAKS experiment [1978, eng] **K-21411**

Wave measurements in the ARAKS experiment [1978, eng] **K-21412**

Broad-band wave measurements in the ARAKS experiment [1978, eng] **K-21413**

Electron spectrometers for the study of artificially injected particles during the ARAKS experiments [1978, eng] **K-21414**

Wide-angle electron detector [1978, eng] **K-21415**

Low energy electron spectrometer *SERBE* [1978, eng] **K-21416**

Instrumentation aboard ARAKS Eridan rocket [1978, eng] **K-21417**

Ion analyzers for measurement of D.C. electric field and ion temperature [1978, eng] **K-21418**

Attitude measurement with Hall-effect magnetomcters [1978, eng] **K-21419**

Optical observations systems for the ARAKS experiment [1978, eng] **K-21420**

Television system for observation of artificial aurorae in the conjugate region during the ARAKS experiment [1978, eng] **K-21421**

High sensitivity optical equipment for detection of weak luminous objects [1978, eng] **K-21422**

Modulation photometer used in ARAKS experiment [1978, eng] **K-21423**

Radiospectrograph used in the ARAKS experiment [1978, eng] **K-21424**

Ground-based observations of h.f. radioemission in ARAKS [1978, eng] **K-21425**

Observations carried out in the field at Kerguelen Station during the ARAKS experiment [1978, eng] **K-21426**

Belcher Islands Expedition—1971 [1971, eng] **K-21479**

ISEE-1 satellite observations of signals from the Siple transmitter [1978, eng] **K-21627**

Jupiter: a new tool for magnetospheric research [1978, eng] **K-21630**

MODELS

PCA variations during shock-wave proton precipitation July 24-25, 1970 [1977, rus] **K-21137**

Atmospherics

Fall meeting 1977, abstracts [1977, eng] **A-21363**

Spring meeting 1978, abstracts [1978, eng] A-21364
Fall meeting 1978, abstracts [1978, eng] A-21365
IAGA/IAMAP Joint Symposia, abstracts [1977, eng] K-21361
Advantages of the Antarctic for ionospheric research [1977, eng] K-21716

Aurora

Nitrogen in south polar ice and snow: tool to measure past solar, auroral, and cosmic ray activities [1977, eng] F-19679
Auroras in the cusp region [1977, eng] K-19720
Auroral infrasonic waves observed at Windless Bight, Antarctica [1977, eng] K-19724
Depressions in midlatitude F-region under relatively quiet geomagnetic conditions [1977, eng] K-19803
Aurorae and closed magnetic field lines [1977, eng] K-19804
Auroral deformation and anomalous viscosity [1978, eng] K-20063
Polar auroras [1975, spa] K-20258
Upper atmosphere research in Antarctica [1978, eng] K-20291
Antarctic ionospheric research [1978, eng] K-20298
Early history of upper atmospheric physics research in Antarctica [1978, eng] K-20299
Mission to the Japanese antarctic station, Showa [1976, fre] K-20350
Optical diagnostics of the August 1972 PCA event [1976, eng] K-20509
Records of all-sky camera photographs Syowa Station, Antarctica in 1976 [1978, eng] K-20516
Auroral x-rays in conjugate regions [1970, eng] K-20698
Auroral activity at Belgrano Station [1978, eng] K-20880
Wave characteristics of magnetic Pi2 pulsations in the auroral region [1978, eng] K-20958
Auroral infrasonic waves and the auroral electrojet [1979, eng] K-21283
Observations carried out in the field at Kerguelen Station during the ARAKS experiment [1978, eng] K-21426
Energy flux in the solar wind and magnetospheric substorms [1978, eng] K-21631
Auroral simulation experiments with a high power electron beam [1979, jap] K-21677
Data processing for auroral electron analysis [1979, jap] K-21678
Measurements of ionospheric electric fields with antarctic sounding rockets S-210JA-24 and 25 [1979, jap] K-21681
Measurements of electric field and auroral X-rays with antarctic balloons [1979, jap] K-21682
Results of studying electromagnetic phenomena in the Antarctic [1978, rus] K-21688

DISTRIBUTION

Spherical harmonic analysis of the austral auroral oval [1978, eng] K-20390
Seasonal displacement of the auroral oval depending on geophysical data [1978, rus] K-21462

DIURNAL VARIATIONS

Auroral absorption at Molodezhnaya Station in 1973 [1978, rus] K-20769

FORMS AND SPECIAL TYPES

Possible classification of photometric records in the polar cap [1978, rus] K-21689

INTENSITY

Belcher Islands Expedition—1971 [1971, eng] K-21479
Observations of auroral-zone precipitating electrons by antarctic rockets [1979, jap] K-21676

MORPHOLOGY

Recent progress in antarctic auroral studies [1978, eng] K-20297
Spherical harmonic analysis of the austral auroral oval [1978, eng] K-20390

PARTICLES

Aurora topic of antarctic research [1976, jap] K-19427
Auroral research applied to radio communication [1966, ger] K-19453
Proton distribution in polar caps, Sep. 7, 1973 [1976, rus] K-19496
Riometer studies at South Georgia [1976, eng] K-19546
Structure of the bursts of auroral protons [1976, rus] K-19776
Eastward movement of the structure of auroral radio absorption events in the morning sector [1976, eng] K-20689
Initial results of rocket studies of charged particle streams in Antarctica [1978, rus] K-20766
Acceleration mechanism of auroral particles: a review [1979, jap] K-21674
Observations of auroral-zone precipitating electrons by antarctic rockets [1979, jap] K-21676

RADIO STUDIES

Auroral research applied to radio communication [1966, ger] K-19453
Dual coherent auroral radar observations from Siple Station, Antarctica [1977, eng] K-19713
Rocket measurements of energy deposition in the atmosphere by auroral X-rays [1977, eng] K-19721
On the polarization and origin of auroral kilometric radiation [1978, eng] K-19873
Records of radio aurora at Syowa Station, Antarctica in 1976 [1978, eng] K-20091
Drift of auroral radar echoes [1978, eng] K-20183
Eastward movement of the structure of auroral radio absorption events in the morning sector [1976, eng] K-20689
Polar cap auroras analyzed by ionospheric forward scatter data [1977, rus] K-21264

VISUAL

Visual observations of auroras: Dumont d'Urville Base [1977, fre] K-19739
Television system for observation of artificial aurorae in the conjugate region during the ARAKS experiment [1978, eng] K-21421
High sensitivity optical equipment for detection of weak luminous objects [1978, eng] K-21422

Auroral zones

Structure of the bursts of auroral protons [1976, rus] K-19776
Results of field intensity measurements of short-wave exact time radio stations at Molodezhnaya [1978, rus] K-20771
Auroral-zone energetic electrons at Showa Station [1978, eng] K-20949
Seasonal displacement of the auroral oval depending on geophysical data [1978, rus] K-21462
Observations of auroral-zone precipitating electrons by antarctic rockets [1979, jap] K-21676
Magnetic field observations with sounding rockets [1979, jap] K-21683
Annual variation of the geomagnetic field in polar regions [1979, jap] K-21684

Aves

Birds of the 1976-77 Snares Islands expedition [1977, eng] B-19907
Notes on New Zealand bird species [1977, eng] B-19908
Conservation of southern ocean marine resources [1978, eng] B-20223
Birds that fly [1975, spa] B-20264
Conservation of antarctic seals and birds [1978, eng] B-20794
Feral pigs on Auckland Island [1975, eng] B-20837
Recent data on the fauna of Saint Paul and New Amsterdam Islands [1972, fre] B-20894
Islands in the wind [1977, eng] B-20915
Life in the deep south [1978, eng] B-21080
Macquarie Island: a sub-Antarctic wonderland [1974, eng] B-21084
Ecological interactions in the Southern Ocean [1979, eng] B-21225
Zoological research in the Chilean Antarctic [1977, spa] B-21293
Exploring Macquarie Island. Part 1. Southern wildlife outpost [1978, eng]. B-21373
Illustrated introduction to antarctic wildlife [1976, ita] B-21382
Observations on King George Island birds [1978, rus] B-21465

BEHAVIOR

Antarctic wildlife sounds [1973, eng] B-19365
Winter observations of birds at Palmer Station in 1977 [1978, eng] B-21588

BLOOD AND CIRCULATION

Oxygen carrying capacity of blood in sea birds [1977, eng] B-19602
Positive tissue fluid pressure in the feet of antarctic birds [1978, eng] B-21183

BREEDING CYCLES AND REPRODUCTION
Birds of the Western Chain Snares Islands, New Zealand [1977, eng] **B-19451**

ECOLOGY
Ornithological research between Argentina and South Georgia [1977, eng] **B-19603**
Seabirds in antarctic marine ecosystems [1977, eng] **B-19604**
Ecological studies in Robert Island (South Shetland) 7. Birds of Robert Island Peninsula [1972, spa] **B-19793**
Notes on seabirds at Gough Island [1976, eng] **B-19900**
Animals of the antarctic islands [1973, eng] **B-20906**
Birds of the Weddell Sea [1978, eng] **B-21587**

GEOGRAPHIC DISTRIBUTION
Ecological studies in Robert Island (South Shetland) 7. Birds of Robert Island Peninsula [1972, spa] **B-19793**
Seabirds sighted from H.M.S. *Endurance*, Oct.1969-May 1970 [1973, eng] **B-19867**
South African participation in cruise MD08 of *Marion Dufresne* [1976, eng] **B-19902**
Ornithological observations in the Australian sector of the Southern Ocean [1976, eng] **B-20053**
Endemicity and cosmopolitanism of birds of the Southern Ocean [1974, eng] **B-20054**
Bird observations in the Weddell Sea [1970, eng] **B-20384**
Observations at sea of Southern Ocean birds [1975, eng] **B-20389**

MARKING
Bird ringing in the Crozet Archipelago, Kerguelen, New Amsterdam and St. Paul Islands [1976, eng] **B-20777**
Note on the ringing of birds in the Kerguelen archipelago since 1951 [1972, fre] **B-20897**
Bird ringing in the Crozet Archipelago, Kerguelen, New Amsterdam and St. Paul Islands [1976, eng] **B-21372**

MIGRATION
Bird ringing in the Crozet Archipelago, Kerguelen, New Amsterdam and St. Paul Islands [1976, eng] **B-20777**
Bird ringing in the Crozet Archipelago, Kerguelen, New Amsterdam and St. Paul Islands [1976, eng] **B-21372**
Winter observations of birds at Palmer Station in 1977 [1978, eng] **B-21588**
Dispersal of algae and Protozoa by antarctic flying birds [1978, eng] **B-21590**

PHYSIOLOGY
Oxygen carrying capacity of blood in sea birds [1977, eng] **B-19602**
Positive tissue fluid pressure in the feet of antarctic birds [1978, eng] **B-21183**

POPULATION
Ornithological research between Argentina and South Georgia [1977, eng] **B-19603**
Seabirds in antarctic marine ecosystems [1977, eng] **B-19604**
Notes on seabirds at Gough Island [1976, eng] **B-19900**
South African participation in cruise MD08 of *Marion Dufresne* [1976, eng] **B-19902**
Birds of the Weddell Sea [1978, eng] **B-21587**

Aves-Anseriformes

NUTRITION
Feeding habits of the blue-eyed shag [1976, spa] **B-21012**

Aves-Charadriiformes
Capturing and immobilizing McCormick skuas [1969, eng] **B-19413**
Man's impact on antarctic birds [1978, eng] **B-19987**
Parasites of antarctic birds and fish [1975, spa] **B-20262**

BEHAVIOR
Ecological and behavioral adaptations to antarctic environments [1977, eng] **B-19605**

BREEDING CYCLES AND REPRODUCTION
Feeding territories and breeding success of South Polar skuas [1978, eng] **B-19811**
Breeding of antarctic terns at the Snares Islands, New Zealand [1978, eng] **B-20237**
Population study of south polar skuas *(Catharacta maccormicki)* age one to eight years [1972, eng] **B-21057**
Impact of unfavorable ice conditions on bird productivity [1978, eng] **B-21589**

ECOLOGY
Ecological and behavioral adaptations to antarctic environments [1977, eng] **B-19605**
Impact of unfavorable ice conditions on bird productivity [1978, eng] **B-21589**

GEOGRAPHIC DISTRIBUTION
Seasonal and spatial distribution of the Antarctic Tern in South Africa [1976, eng] **B-19903**
Auckland Islands Dotterel [1978, eng] **B-20591**

MIGRATION
Some observations of South Polar skuas *(Catharacta maccormicki)* on Georges Bank [1978, eng] **B-21487**

MORPHOLOGY
Auckland Islands Dotterel [1978, eng] **B-20591**

NUTRITION
Feeding territories and breeding success of South Polar skuas [1978, eng] **B-19811**

PATHOLOGY
Trematoda: Notocotylidae from the Sheathbill [1969, eng] **B-19339**
Trematode parasites of the Sheathbill [1968, eng] **B-19340**
Nematode and acanthocephalan parasites of the Sheathbill [1969, eng] **B-19342**

POPULATION
Population study of south polar skuas *(Catharacta maccormicki)* age one to eight years [1972, eng] **B-21057**

Aves-Procellariiformes
Wing loadings, wing shapes, and flight capabilities of Procellariiformes [1977, eng] **B-19421**
Contamination of Peregrine falcons with fulmar stomach oil [1977, eng] **B-19514**

BEHAVIOR
Behaviour of antarctic petrels and antarctic fulmars before laying [1977, eng] **B-19813**

BREEDING CYCLES AND REPRODUCTION
Snow petrel colonies in Queen Maud Land [1977, eng] **B-19777**
Behaviour of antarctic petrels and antarctic fulmars before laying [1977, eng] **B-19813**
Silver-grey fulmar *(Fulmarus glacialoides)* of the Haswell Archipelago [1978, rus] **B-20729**
Interspecific breeding attempts by *Macronectes giganteus* and *M. halli* [1978, eng] **B-21315**
Interbreeding by *Macronectes halli* and *M. giganteus* at Macquarie Island [1978, eng] **B-21316**

ECOLOGY
Adélie penguin colonies on Hobbs Coast [1978, eng] **B-21593**

GEOGRAPHIC DISTRIBUTION
Northern records of the Antarctic Petrel *Thalassoica antarctica* in the South Pacific [1977, eng] **B-19747**
Southern giant petrels in Australian waters [1974, eng] **B-20357**
Summer distribution of Procellariiformes in the Southern Ocean [1975, rus] **B-21370**

MIGRATION
Summer distribution of Procellariiformes in the Southern Ocean [1975, rus] **B-21370**

MORPHOLOGY
Giant-petrels in the South Atlantic: new data from Gough Island [1976, eng] **B-19899**

POPULATION
Giant-petrels in the South Atlantic: new data from Gough Island [1976, eng] **B-19899**

Aves-Sphenisciformes
Adaptations in penguins [1977, rus] **B-19533**
Basic reading list on penguins (1954-1974) [1977, rus] **B-19542**

"Complete" seal carcass at Lake Miers, Miers Valley [1977, eng] B-19599
Permanent breeding colony of high antarctic penguins for research and education [1977, eng] B-19601
Our friends in the sea and on the coasts [1973, fre] B-19745
Man's impact on antarctic birds [1978, eng] B-19987
General biology and thermal balance of penguins [1967, eng] B-20401
Penguins, whalers, and sealers: a voyage of discovery [1977, eng] B-20497
Penguin and seal carcasses on Black Island [1978, eng] B-20592
Albinism in a Gentoo penguin [1977, spa] B-21294

BEHAVIOR
Diurnal rhythm of activity by the Adelie penguin [1977, eng] B-19450
Sonar in *Eudyptes chrysolophus* [1977, rus] B-19537
Penguins in Moscow [1977, rus] B-19541
Diving behavior of fur seals and king penguins [1977, eng] B-19596
Behavioral and ecological adaptations in pygoscelid penguins [1977, eng] B-19600
Diurnal activity of Adelie penguins at Cape Bird [1978, eng] B-20016
Activity patterns and social behavior of non-breeding Adelie penguins [1978, eng] B-20621
Cool California penguins [1979, eng] B-21261
Behavioral and ecological adaptations in pygoscelid penguins [1978, eng] B-21591

BLOOD AND CIRCULATION
Proteins of penguin egg white and blood serum [1968, eng] B-19289
Extracellular water distribution and circulatory function of the penguin [1970, eng] B-19746
Penguin blood analysis [1977, rus] B-19886

BREEDING CYCLES AND REPRODUCTION
Utilization of energy reserves during the breeding fast in the Emperor penguin, *Aptenodytes forsteri* [1976, fre] B-19341
Preliminary note on the Gentoo penguin of Possession Island [1972, fre] B-20895
Growth of Emperor penguin chicks at Cape Crozier, Ross Island, Antarctica [1972, eng] B-21056
Establishment of a penguin colony and controlled environment breeding of Adélie penguins [1978, eng] B-21594

ECOLOGY
Comparative growth of penguin chicks in the genus *Pygoscelis* [1977, fre] B-19382
Ecology of emperor penguins of the Haswell Archipelago [1977, rus] B-19540
Behavioral and ecological adaptations in pygoscelid penguins [1977, eng] B-19600
Feeding territories and breeding success of South Polar skuas [1978, eng] B-19811
Behavioral and ecological adaptations in pygoscelid penguins [1978, eng] B-21591
Adélie penguin colonies on Hobbs Coast [1978, eng] B-21593
New giant penguin from the Eocene of Australia [1974, eng] E-20141

EMBRYOLOGY
Proteins of penguin egg white and blood serum [1968, eng] B-19289
Adelie penguin embryonic development [1978, eng] B-20632

EVOLUTION
Functional morphology of feeding apparatus in penguins [1977, rus] B-19534
Evolution of flightlessness in penguins [1976, eng] B-20927
Biochemistry and immunochemistry of penguin egg-white proteins [1975, eng] B-21281

GEOGRAPHIC DISTRIBUTION
Geology and the distribution of Macaroni penguin colonies at Marion Island [1978, eng] B-21154

LOCOMOTION
Sonar in *Eudyptes chrysolophus* [1977, rus] B-19537

MORPHOLOGY
Functional morphology of feeding apparatus in penguins [1977, rus] B-19534
Pterylography of penguins [1977, rus] B-19535
Sonar in *Eudyptes chrysolophus* [1977, rus] B-19537
Ocular morphology of the king penguin [1977, rus] B-19538

NUTRITION
Effect of photoperiod and diet on penguin chick molt [1977, fre] B-19383
Study of molt fasting followed by an experimental forced fasting in the emperor penguin *Aptenodytes forsteri:* relationship between feather growth, body weight loss, body temperature and plasma fuel levels [1978, eng] B-21222

PHYSIOLOGY
Utilization of energy reserves during the breeding fast in the Emperor penguin, *Aptenodytes forsteri* [1976, fre] B-19341
Effect of photoperiod and diet on penguin chick molt [1977, fre] B-19383
Penguin *(Aptenodytes forsteri)* myoglobin. A 70 residue N-terminal sequence [1973, eng] B-19393
Penguin hemoglobin *(Aptenodytes forsteri).* A 45 residue N-terminal sequence [1973, eng] B-19394
Penguin energetics [1977, rus] B-19536
Physiological and biochemical features of the crested penguin [1977, rus] B-19539
Extracellular water distribution and circulatory function of the penguin [1970, eng] B-19746
Penguin blood analysis [1977, rus] B-19886
Internal temperature of the Gentoo penguin [1972, fre] B-20896
Physiological data on the Emperor penguin [1972, fre] B-20898
Pentobarbitone as an anaesthetic agent in Adelie penguins [1975, eng] B-21114
Bile secretion in the Adelie penguin [1978, eng] B-21184
Study of molt fasting followed by an experimental forced fasting in the emperor penguin *Aptenodytes forsteri:* relationship between feather growth, body weight loss, body temperature and plasma fuel levels [1978, eng] B-21222
Biochemistry and immunochemistry of penguin egg-white proteins [1975, eng] B-21281
Corneal curvature and amphibious vision in penguins [1978, eng] B-21592

POPULATION
Summary of the annual Adelie penguin census at Cape Royds [1978, eng] B-20317
Population changes in Adelie penguins [1978, ger] B-20406
Counting penguins [1975, eng] B-20495
Bird and seal observations at Joinville Island and offshore islands [1978, eng] B-21595
Seal and emperor penguin survey, Victoria Land Coast [1978, eng] B-21596

TAXONOMY
Pterylography of penguins [1977, rus] B-19535
Chemotaxonomical relationships between penguins and tubenoses [1976, eng] B-21252
Biochemistry and immunochemistry of penguin egg-white proteins [1975, eng] B-21281

Bacteria
See: Microbiology

Banding
See: Aves/Marking

Bathymetry
Spring meeting 1978, abstracts [1978, eng] A-21364
Opening of Drake Passage [1977, eng] E-19256
Kerguelen Plateau bathymetry, sediment distribution and crustal structure [1977, eng] E-19260
Unusual drainage system in an antarctic valley [1976, eng] E-19551
Carbonate compensation depth in the Southern Ocean south of Australia [1975, eng] J-19274
Combined effects of wind stress and topography in a two-layer model of the Southern Ocean [1978, eng] J-20162
Seventh voyage of the R/V *Ob'* [1968, eng] J-20327
Activities of the *Ob',* 1961-62 [1968, eng] J-20328

Bathymetry *(cont.)*
Cruise data report: R/V *Chain* Cruise 115 Legs 3 and 4, Southlant Expedition [1974, eng] **J-21000**
Abyssal traces and megafauna in the Arctic and Antarctic [1978, eng] **J-21452**

Behavior
See under: Arthropoda-Crustacea; Aves; Aves-Charadriiformes; Aves-Procellariiformes; Aves-Sphenisciformes; Mammalia-Cetacea; Mammalia-Pinnipedia; Pisces

Benthos
Reproductive periodicities in a common Antarctic asteroid [1965, eng] **B-19252**
Limnological survey of the Ablation Point area, Alexander Island, Antarctica [1977, eng] **B-19472**
Foraminifera and radiolaria in sediments of the Scotia and Weddell Seas [1967, eng] **B-19519**
Ecology of some antarctic benthic fishes and echinoderms [1977, eng] **B-19607**
Processes organizing contrasting benthic communities of McMurdo Sound [1977, eng] **B-19608**
Ross Ice Shelf Project--benthic biology, 1976-1977 [1977, eng] **B-19614**
South African participation in cruise MD08 of *Marion Dufresne* [1976, eng] **B-19902**
Marine biology. Vol.2. Biological productivity of the ocean [1977, rus] **B-20017**
Dissimilar and similar trends in antarctic and arctic marine benthos [1977, eng] **B-20040**
Amphipods and polychaetes of both polar oceans compared [1977, eng] **B-20042**
Aquatic primary production in the Antarctic [1977, eng] **B-20274**
Mathematical analysis of bottom fauna distribution [1978, rus] **B-20444**
Pacific Ocean. Biology of the Pacific Ocean. Part 2. The deep-sea bottom fauna. Pleuston [1970, eng] **B-20491**
Abyssal benthonic foraminifera [1978, eng] **B-20538**
Recent foraminifera [1976, eng] **B-20548**
Life in the deep south [1978, eng] **B-21080**
Life below the Ross Ice Shelf, Antarctica [1979, eng] **B-21101**
Fish, crustaceans, and the sea floor under the Ross Ice Shelf [1979, eng] **B-21102**
Biology of an antarctic aquatic moss community [1978, eng] **B-21289**
Long-term experimental benthic studies in McMurdo Sound [1978, eng] **B-21583**
Benthic fishes and echinoderms in the Scotia Arc region [1978, eng] **B-21584**
Benthic marine biology, Ross Ice Shelf Project [1978, eng] **B-21585**
Marine microfossils on the McMurdo Ice Shelf [1977, eng] **E-19644**
Studies of deep-sea benthonic foraminifera in the southeast Indian Ocean [1978, eng] **E-21570**
Sediments and life under the Ross Ice Shelf (J-P), Antarctica [1978, eng] **E-21586**
Deep sea macrobenthos trophic structure [1976, rus] **J-20230**
Abyssal traces and megafauna in the Arctic and Antarctic [1978, eng] **J-21452**

Bibliographies
Bibliography of dry valley publications 1959-1976 [1977, eng] **A-19468**
Language distribution of antarctic literature [1977, eng] **A-19725**
Catalogue of data and publications on the Arctic and Antarctic; Vols. 1, 3-6 [1976, rus] **A-19881**
List of Royal Geographic Society archives on Antarctica [1976, eng] **A-20006**
Documents retrieval system at National Institute of Polar Research [1978, eng] **A-20089**
Bibliography of N.Z.A.R.P. publications 1956-1976 [1978, eng] **A-20587**
Bibliography of international dry valley publications, 1907-1977 [1978, eng] **A-20588**
Searching on-line data bases for the *Antarctic Bibliography* [1978, eng] **A-21637**
Basic reading list on penguins (1954-1974) [1977, rus] **B-19542**
Bibliography of antarctic krill [1977, eng] **B-20242**
Annotated bibliography of the paleontology of lesser Antarctica and the Scotia Ridge [1977, eng] **E-20176**
See also under: Geology; Ice; Snow

Biochemistry
Freezing resistance in some Antarctic fishes [1968, eng] **B-19272**
Proteins of cold-adapted Antarctic fishes [1969, eng] **B-19288**
Proteins of penguin egg white and blood serum [1968, eng] **B-19289**
Temperature adaptation in fish myofibrillar ATPases [1977, eng] **B-19448**
Lipid composition of *Chorismus antarcticus* [1977, eng] **B-19471**
Manufacture of krill protein concentrate [1977, jap] **B-19511**
Studies on proteases from antarctic krill [1977, jap] **B-19512**
Contamination of Peregrine falcons with fulmar stomach oil [1977, eng] **B-19514**
Awake breath-hold diving in the Weddell Seal [1977, eng] **B-19595**
Role of glycoprotein and peptide antifreezes in the survival of polar fishes [1977, eng] **B-19606**
Ecology of some antarctic benthic fishes and echinoderms [1977, eng] **B-19607**
Lipid sacs as a buoyancy adaptation in an antarctic fish [1978, eng] **B-19906**
Potential impact of harvesting zooplankton on the south circumpolar ecosystem [1978, eng] **B-19985**
Utilization of krill [1977, eng] **B-20003**
Adsorption inhibition as a mechanism of freezing resistance in polar fishes [1977, eng] **B-20021**
Physiology of cold adaptation in polar marine poikilotherms [1977, eng] **B-20041**
Physiology and biochemistry of low temperature adaptations in polar marine ectotherms [1978, eng] **B-20206**
Chemical composition of *Paramoera walkeri* [1974, eng] **B-20219**
Effect of a new food product, krill paste, on chemical carcinogenesis [1976, rus] **B-20431**
Bacterial flora of antarctic krill [1978, eng] **B-20504**
Analysis of krill, krill products and antarctic fish species [1977, ger] **B-20557**
Utilization of krill shells in feeding experiments with rats [1978, ger] **B-20560**
Notes on some fishes associated with the antarctic krill. 1. *Neopagetopsis ionah* Nybelin [1978, eng] **B-20825**
Carbon isotope ratio of marine plankton related to surface water masses [1978, eng] **B-20959**
Growth stages of *Ophionotus hexactis* during intraovarian incubation [1979, eng] **B-21174**
Dehydration effects on krill protein [1978, chi] **B-21249**
Biochemistry and immunochemistry of penguin egg-white proteins [1975, eng] **B-21281**
Blood chemistry of freely diving Weddell seals [1978, eng] **B-21598**
On the survival of organic compounds in the polar regions of Mars [1978, eng] **E-21093**
Isotope studies [1978, eng] **I-21188**
Carbon isotope composition in the marine environment [1978, eng] **J-20579**

Biogeography
Ecology and biogeographic patterns of planktonic foraminifera [1977, eng] **B-20102**
Terrestrial ecosystems in the Antarctic [1977, eng] **B-20273**
Tardigrada of New Zealand [1978, eng] **B-20549**
Littoral ecology of Marion and Prince Edward Islands (Southern Ocean) [1976, eng] **B-20835**
Lichen-invertebrate associations [1977, eng] **B-21176**
Corybas macranthus (Hook.f.) Reichb.f. (Orchidaceae), a new record for Macquarie Island [1978, eng] **B-21284**
Development of planktonic biogeography in the southern ocean during the Cenozoic [1978, eng] **B-21562**
Biogeography and metabolism of Ross Sea plankton [1978, eng] **B-21580**
Physical-geographic description of the Fildes Peninsula (South Shetland Islands) [1977, eng] **E-19372**
Three new species of *Pulvinites* [1978, eng] **E-20547**
Oceanic micropalaeontology [1977, eng] **E-20563**
Eocene nautiloid fauna from La Meseta Formation, Seymour Island [1978, eng] **E-21515**

Modern zoogeography of antarctic planktonic microfossils [1978, eng] E-21567
Biogeographic aspects of the distribution and dynamics of water masses off the South American coast [1978, eng] J-20933

PHYTOGEOGRAPHY
Microsporum magellanicum and *Cunninghamella antarctica* [1977, eng] B-19312
Foliose and fruticose lichens from Tristan da Cunha [1977, eng] B-19455
Transfer of New Zealand *Tylotus proliferus* to the genus *Gracilaria* [1977, eng] B-19807
Studies on the bryoflora of Macquarie Island, II [1978, eng] B-20411
Goats on Auckland Islands [1978, eng] B-20903
Lichens of Navarino Island. Pt. 1. Preliminary systematic and ecological study [1977, spa] B-20913
Ecology of marine planktonic diatoms [1977, eng] B-21055
Displaced antarctic diatoms in the southwestern and central Pacific [1976, eng] B-21060
Lichens of cold deserts [1977, eng] B-21177
Additional postglacial pollen diagram from Patagonia Occidental [1972, eng] E-20905
Postglacial pollen diagrams from South Georgia (sub-Antarctic) and West Falkland Island (South Atlantic) [1978, eng] E-21215

ZOOGEOGRAPHY
Philotarsidae (Psocoptera) of New Zealand and islands of the New Zealand Plateau [1977, eng] B-19268
First record of *Ereynetes macquariensis* from Anvers Island [1977, eng] B-19378
Birds of the Western Chain Snares Islands, New Zealand [1977, eng] B-19451
Ecology of some antarctic benthic fishes and echinoderms [1977, eng] B-19607
Seasonal and spatial distribution of the Antarctic Tern in South Africa [1976, eng] B-19903
Birds of the 1976-77 Snares Islands expedition [1977, eng] B-19907
Notes on New Zealand bird species [1977, eng] B-19908
Oligochaeta from subantarctic islands [1968, eng] B-19957
Living resources of the Southern Ocean [1977, eng] B-20001
Edwardsininae (Diptera:Blephariceridae): transantarctic dispersal or relict distribution [1975, eng] B-20010
Amphipods and polychaetes of both polar oceans compared [1977, eng] B-20042
Bivalve mollusc *Limatula:* a review [1978, eng] B-20101
Sessile *Tubinella funalis* (Brady) [1978, eng] B-20539
New Zealand Diapriinae [1978, eng] B-20543
Revision of the South American Zoarcidae (Osteichthyes, Blennioidei) [1977, eng] B-20556
Catalog of Magellanic and Chilean antarctic Arachnida [1976, spa] B-20836
Nonasellote isopod crustaceans from Anvers Island and other antarctic locations [1978, eng] B-20852
Taxonomy and distribution of planktonic ostracods [1978, eng] B-20853
Marine nematodes from McMurdo Sound [1978, eng] B-20854
Analysis of relationships among antarctic mesofauna and various climatic factors [1977, spa] B-20910
Early mammals in South America [1978, eng] B-20918
Paleodistribution of marine isopods and continental drift [1979, eng] B-21394
Contribution to the knowledge of the Decapod Crustacea of Tierra del Fuego with some zoogeographical observations [1977, spa] B-21429
Species composition and zoogeographic analysis of bottom fish fauna in the Scotia Sea [1977, rus] B-21433
Benthic fishes and echinoderms in the Scotia Arc region [1978, eng] B-21584
Antarctic and southernmost South American fossil echinoids [1977, eng] E-19643
Late Cambrian Brachiopoda, Mollusca, and Trilobita from northern Victoria Land, Antarctica [1976, eng] E-20142
Recent planktonic foraminifera [1977, eng] E-20564
Zoogeographic and taxonomic review of euthecosomatous Pteropoda [1977, eng] E-20566
Ecology and distribution of Recent radiolaria [1977, eng] E-20567

Biological specimens
See: Specimen collections/Biological

Biology
Physicians as explorers. Joseph Hooker: botanical journeys in Antarctica and India [1977, eng] A-20196
Research in perennial ice [1975, ger] A-20289
Polar research: a synthesis with special reference to biology [1978, eng] B-20200
Outlying islands of Macquarie Island [1978, eng] E-20847
Working Group on Human Biology and Medicine [1978, eng] H-20325
See also: Aerobiology; Marine biology; Microbiology; Terrestrial biology

INSTRUMENTS
Life below the Ross Ice Shelf, Antarctica [1979, eng] B-21101

MODELS
Ecology and biogeographic patterns of planktonic foraminifera [1977, eng] B-20102
Problems in the conservation of polar marine mammals [1978, eng] B-20205
Some properties of the Schaefer model for baleen whale populations [1976, eng] B-20657
More flexible model for baleen whale populations [1976, eng] B-20660
Paleodistribution of marine isopods and continental drift [1979, eng] B-21394

Birdbanding
See: Aves/Marking

Birds
See: Aves

Blasting
See: Explosives

Blood and circulation
See under: Aves; Aves-sphenisciformes; Mammalia-Pinnipedia; Pisces

Botany
Classification of terrestrial vegetation near McMurdo Sound, continental Antarctica [1973, eng] B-19396
History and status of goats on the Auckland Islands [1977, eng] B-19806
Novelties in Australian *Epilobium* (Onagraceae) [1977, eng] B-19808
Geobotanical regions of the Arctic and Antarctic [1977, rus] B-20007
Baobabs: remnant of Gondwanaland [1977, eng] B-20580
Altitudinal distribution and phenology of Marion Island vascular plants [1970, eng] B-20586
Littoral ecology of Marion and Prince Edward Islands (Southern Ocean) [1976, eng] B-20835
Case for controlling the distribution of the tree daisy *(Olearia lyallii)* Hook.f. in its type locality, Auckland Island [1976, eng] B-20839
Goats on Auckland Islands [1978, eng] B-20903
Islands in the wind [1977, eng] B-20915
Corybas macranthus (Hook.f.) Reichb.f. (Orchidaceae), a new record for Macquarie Island [1978, eng] B-21284
Studies on the ecology of the vegetation at Mawson Station, Antarctica [1978, eng] B-21323
Origin of the New Zealand mountain flora [1978, eng] B-21356
Palynostratigraphy of the Victoria group of South Victoria Land, Antarctica [1977, eng] E-20756
Miocene diatom flora from bottom cores at RISP site J-9 [1978, eng] E-21574
See also: Biogeography/Phytogeography; Ecology/Floral; Paleobotany

Boundaries
See: Territorial claims and boundaries

Breakup
See under: Pack ice; Shelf ice

Breeding cycles and reproduction
See under: Arthropoda-Crustacea; Aves; Aves-Charadriiformes; Aves-Procellariiformes; Aves-Sphenisciformes; Bryozoa; Echinodermata; Mammalia; Mammalia-Cetacea; Mammalia-Pinnipedia; Mollusca; Pisces; Spermatophyta

Bryophyta
Photosynthesis in mosses and lichens [1975, eng] **B-20399**

ECOLOGY
Plant communities near Showa related to water supply and soil [1977, jap] **B-19297**
Moss and lichen communities near Showa [1977, jap] **B-19298**
Plant distribution on W. Ongul and Teöya Islands [1977, jap] **B-19299**
Development of moss-peat banks in relation to changing climate and ice cover on Signy Island in the maritime Antarctic [1976, eng] **B-19552**

Bryophyta-Musci
Studies on the bryoflora of Macquarie Island, II [1978, eng] **B-20411**
Leafy mosses of East Antarctica [1978, rus] **B-20429**
Biology of an antarctic aquatic moss community [1978, eng] **B-21289**

ECOLOGY
Musci taxocenosis of the Fildes Peninsula (King George Island, South Shetland Islands) [1977, spa] **B-20914**

GEOGRAPHIC DISTRIBUTION
Musci taxocenosis of the Fildes Peninsula (King George Island, South Shetland Islands) [1977, spa] **B-20914**

MORPHOLOGY
Bryophyte species on Signy Island [1976, eng] **B-19562**

TAXONOMY
Bryophyte species on Signy Island [1976, eng] **B-19562**
Musci taxocenosis of the Fildes Peninsula (King George Island, South Shetland Islands) [1977, spa] **B-20914**

Bryozoa

BREEDING CYCLES AND REPRODUCTION
Bryozoan epizoa of *Laetmonice producta* Grube (Annelida, Polychaeta) [1972, spa] **B-19792**

ECOLOGY
Bryozoan epizoa of *Laetmonice producta* Grube (Annelida, Polychaeta) [1972, spa] **B-19792**

GEOGRAPHIC DISTRIBUTION
Bryozoan species new to Antarctica [1975, spa] **B-19846**

MORPHOLOGY
Pedunculate ctenostome from the antarctic [1968, jap] **B-21277**

TAXONOMY
Bryozoan species new to Antarctica [1975, spa] **B-19846**

Buildings
Snow drifts in polar regions [1977, eng] **F-19758**
Aluminum home for researchers [1977, ger] **G-19367**
Geodesic dome at Amundsen-Scott [1975, spa] **G-20256**
Human life support in Antarctica [1978, rus] **G-20677**
Medical care in French austral and antarctic territories [1976, fre] **H-20345**
Sky-Hi Station report, Dec. 1961-Feb. 1962 [1962, eng] **K-19743**
See also: Construction/Building; Research facilities

Calving
See under: Glacier ice; Icebergs; Shelf ice

Cargo operations
Moving ice [1978, eng] **F-21078**
Report of Operation *Deep Freeze* 78, 1977-1978 [1978, eng] **G-20416**
Operation *Deep Freeze:* Operation order No.1-79 [1978, eng] **G-20783**

AIR
Air operations, *Deep Freeze* '77 [1977, eng] **G-19731**
Report of Antarctic Development Squadron Six operations [1978, eng] **G-20415**

OVERSNOW
Conditions for ship unloading near Novolazarevskaya Station [1977, rus] **G-19887**

SEA
Soviet antarctic expedition bulletin, vol. 92, 1976: selected articles [1977, eng] **F-19402**
Unloading of an IL-14 aircraft onto a giant iceberg [1977, eng] **G-19409**
Ship operations, *Deep Freeze* '77 [1977, eng] **G-19734**
Deep Freeze 1978 cruise report [1978, eng] **G-19865**
Conditions for ship unloading near Novolazarevskaya Station [1977, rus] **G-19887**
Polar icebreaker cruise report, Operation *Deep Freeze* '79 [1979, eng] **G-21256**
Deep Freeze 1979 Cruise Report [1979, eng] **G-21488**
Ship operations, *Deep Freeze* 78 [1978, eng] **G-21645**

Cartography
See: Maps and charts

INSTRUMENTS
Survey of a traverse on the Antarctic inland ice [1975, ger] **C-19501**
Antarctic cartography [1977, eng] **C-19675**

Cetacea
See: Mammalia-Cetacea

Charadriiformes
See: Aves-Charadriiformes

Charts
See: Maps and charts

Chemistry
See under: Firn; Glacier ice; Hoarfrost; Ice; Ice sheet; Pack ice; Rime; Sea ice; Sea water; Shelf ice; Snow. *See also:* Biochemistry; Geochemistry

Chronology
See: Age determination; Geochronology

Circulation
See under: Atmosphere; Ocean

Claims
See: National interests; Territorial claims and boundaries

Climate
Geobotanical regions of the Arctic and Antarctic [1977, rus] **B-20007**
Ecosystem diversity differences: poles and tropics [1977, eng] **B-20038**
Dissimilar and similar trends in antarctic and arctic marine benthos [1977, eng] **B-20040**
Physiology of cold adaptation in polar marine poikilotherms [1977, eng] **B-20041**
Terrestrial ecosystems in the Antarctic [1977, eng] **B-20273**
Littoral ecology of Marion and Prince Edward Islands (Southern Ocean) [1976, eng] **B-20835**
Preliminary note on the Gentoo penguin of Possession Island [1972, fre] **B-20895**
Analysis of relationships among antarctic mesofauna and various climatic factors [1977, spa] **B-20910**
Islands in the wind [1977, eng] **B-20915**
Role of lichens in antarctic ecosystems [1978, eng] **B-21228**
Physical-geographic description of the Fildes Peninsula (South Shetland Islands) [1977, eng] **E-19372**
Two patterns of modern global lithogenesis and their methodology [1978, eng] **E-20902**
Glaciological investigations near the ice sheet margin, Wilkes Station, Antarctica [1968, eng] **F-19569**
Thermal response to albedo reduction on antarctic snow—modeling results [1977, eng] **F-19680**
Sea ice studies in the Weddell Sea region aboard USCGC *Burton Island* [1977, eng] **F-19706**

Glaciological studies in Mizuho Plateau, East Antarctica, 1969-1975 [1978, eng] F-19819
Glaciological research program on Mizuho Plateau, 1969-1975 [1978, eng] F-19820
Ice age, past and present [1977, eng] F-19863
West Antarctic ice sheet and CO2 greenhouse effect: a threat of disaster [1978, eng] F-19878
Global glacier mass balance variations during the past 300 years [1977, eng] F-20046
Distribution of mean surface stable isotope values [1977, eng] F-20115
Stable isotope variations in snow and ice at Vostok, Antarctica [1977, eng] F-20121
Isotopes, climate and ice sheet dynamics [1977, eng] F-20124
Total gas content in polar ice: rheological and climatic implications [1977, eng] F-20126
Dyke-sill thermal convection in polar ice sheets [1977, eng] F-20127
Variations in Greenland and Antarctic deep ice cores [1977, eng] F-20128
Isotope analysis of ice cores from Vostok [1977, eng] F-20130
Icebergs in the Southern Ocean [1976, eng] F-20247
Antarctic ice and history of world climate [1975, spa] F-20260
Ice crystals in the Antarctic atmosphere [1976, eng] F-20307
Iceberg utilization [1978, eng] F-20448
Problems associated with iceberg utilization [1978, eng] F-20450
Environmental factors along an iceberg tow route in the Indian Ocean [1978, eng] F-20471
Role of iceberg utilization in solving the Saudi Arabian water problems [1978, eng] F-20478
Cloud seeding and potential weather impacts [1978, eng] F-20484
Weather modification and environmental and ecological impact (caused by towed icebergs) [1978, eng] F-20489
Antarctic glaciation and world climate [1978, rus] F-20673
Gas inclusions in glacier ice of the Arctic and Antarctic [1976, fre] F-20845
Earth science investigations on the sixth continent [1978, ger] F-20865
Use of infrared and visible imagery for sea ice monitoring [1978, eng] F-21066
Recent changes in snow and ice [1978, eng] F-21190
Disposal of radioactive waste in ice sheets [1977, eng] G-19759
New data on climatic trends [1977, eng] I-19343
Climatic change, orography and geostrophic motion [1975, eng] I-19414
Study of the climate of the Kerguelen Islands and subantarctic region of the Indian Ocean. Climatology of Port-aux-Français [1977, fre] I-19464
Climatic charts for BAS stations, 1971 [1976, eng] I-19557
Climatic charts for BAS stations, 1972 [1976, eng] I-19558
Temperature regime of the South Pole [1977, eng] I-19694
Geophysical monitoring for climatic change at the South Pole [1977, eng] I-19695
Operational meteorology, *Deep Freeze* '77 [1977, eng] I-19735
Surface temperature and sea-level pressure at Norway Station and Sanae [1976, eng] I-19901
Energy balance climate models [1978, eng] I-19990
Climate of the upper air: Southern Hemisphere. Vol.3. Vector mean geostrophic winds: isogon and isotach analyses [1971, eng] I-20140
Role of the polar regions in global climate change [1978, eng] I-20202
Spatial distribution of 10 m temperatures in the Antarctic Peninsula [1978, eng] I-20653
Properties of the background global aerosol and their effects on climate [1976, eng] I-20699
Polar Sub-programme [1978, eng] I-20823
Implications of outer space technology in meteorology [1975, eng] I-20859
Effects of human activities on global climate; a summary, with consideration of the implications of a possibly warmer earth [1977, eng] I-20957
Dry ice = Antarctica [1978, eng] I-21077
Climatic change and variability: a southern perspective [1978, eng] I-21105
Some results of the CLIMAP project [1978, eng] I-21108
Climatic change [1978, eng] I-21186
Geological-geophysical framework of ice ages [1978, eng] I-21187
Heat balance of the Earth [1978, eng] I-21189
Global influences of mankind on the climate [1978, eng] I-21191
Climatonomical modeling of temperature response to dust contamination of antarctic snow surfaces [1977, eng] I-21377
Geophysical monitoring for climatic change, No.6. Summary report 1977 [1978, eng] I-21405
Early winter storms in the northwestern Weddell Sea [1978, eng] I-21610
Possible mechanism of meridional atmospheric circulation over Antarctica [1978, eng] I-21613
Operational meteorology, *Deep Freeze* 78 [1978, eng] I-21614
Geophysical monitoring for climatic change at the South Pole, 1977 [1978, eng] I-21618
Report of polar meteorology workshop, Reno, Nevada, 1975 [1976, eng] I-21660
Polar aerosol-climatic implications [1976, eng] I-21670
Survey of worldwide sea surface temperature fronts [1978, eng] J-20706
Climatic characteristics of the Antarctic Polar Front Zone [1978, eng] J-20707
Oceanic fronts [and] European Geophysical Society meeting abstracts [1977, eng] J-21362
Importance of the Antarctic in atmospheric sciences [1977, eng] K-19480

See also: Paleoclimatology

CYCLES AND TRENDS
Polar sub-programme of GARP [1978, eng] A-20983
Development of moss-peat banks in relation to changing climate and ice cover on Signy Island in the maritime Antarctic [1976, eng] B-19552
Fluctuation of the antarctic ice sheet and the Quaternary [1977, jap] F-19584
Oxygen isotope studies on Cenozoic temperatures, oceans and ice accumulation [1977, eng] F-20443
Effect of antarctic glaciation on global climate [1978, rus] F-20806
Climatic roles of ice [1978, eng] F-21282
Effect of climatic warming on the West Antarctic ice sheet [1979, eng] F-21404
Effects of human activities on global climate [1977, eng] I-19491
Seasonal climatic variability over the southern oceans [1977, eng] I-20076
Is mankind warming the Earth [1978, eng] I-20105
Present state of knowledge about late Cenozoic glaciation [1975, rus] I-21014
Antarctic influence on Brazil's environment [1977, eng] I-21062
Cenozoic climates: Antarctica and the Southern Ocean [1978, eng] I-21107
Climatic and topographic changes from glaciological data [1978, eng] I-21109
Climatic effects of antarctic ice sheet surge [1978, eng] I-21110
Theories of Upper Quaternary ice ages [1978, eng] I-21112
Glacial development and temperature trends in the Antarctic and in South America [1978, eng] I-21385
Polar Oceans conference proceedings [1977, eng] J-20022
Long-term global sea surface temperature fluctuations and their possible influence on atmospheric CO2 concentrations [1978, eng] J-21480

MICROCLIMATES
French accomplishments in glaciology, 1974 [1975, fre] F-20420
Water supply and weather modifications through the use of transported icebergs from the Antarctic [1977, eng] G-20904

Clothing
Snow [1978, eng] A-19862
Living conditions during the antarctic winter [1973, jap] G-19442
Clothing man in a cold environment [1978, eng] G-20318
Antarctic clothing [1976, eng] G-20494
Human life support in Antarctica [1978, rus] G-20677
Cold weather clothing with electric heating units [1976, eng] G-20989
Food and logistics material for the polar traverse [1975, eng] G-20990
Design recommendations for insulated clothing for members of Soviet antarctic expeditions [1978, rus] G-21045
Physiological adaptation and health of an expedition in Antarctica, with comment on behavioural adaptation [1977, eng] H-19266

Cloud seeding
Cloud seeding and potential weather impacts [1978, eng] F-20484

Cloud seeding *(cont.)*
Dry ice = Antarctica [1978, eng] **I-21077**

Clouds
Radiation budget at Plateau Station, Antarctica, 1966-1967 [1977, eng] **I-19337**
Meteorological data at Mizuho Camp, Antarctica in 1976-1977 [1977, eng] **I-19360**
On the nature of persistent stratospheric clouds in the Antarctic [1977, eng] **I-19816**
Satellite cloud cover data for refining Southern Hemisphere upper air charts [1975, rus] **I-20545**
Features of atmospheric processes over the Drake Passage and nearby portions of the Southern Ocean, summer 1976 [1978, rus] **I-20642**
Satellite cloud mosaics for the Southern Hemisphere [1978, eng] **I-20884**
Atmospheric ice crystals at the South Pole in summer [1978, eng] **I-21609**
Features of radiation balance at the water surface in the Drake Passage, summer 1976 [1978, rus] **J-20645**

Coelenterata

GEOGRAPHIC DISTRIBUTION
Hydroids from the Kerguelen and Crozet shelves, collected by the cruise MD-03 of the *Marion Dufresne* [1977, eng] **B-19364**

MORPHOLOGY
Hydroids from the Kerguelen and Crozet shelves, collected by the cruise MD-03 of the *Marion Dufresne* [1977, eng] **B-19364**

TAXONOMY
Hydroids from the Kerguelen and Crozet shelves, collected by the cruise MD-03 of the *Marion Dufresne* [1977, eng] **B-19364**

Compaction
See under: Ice

Conferences
IAGA/IAMAP joint meeting [1978, jap] **A-20441**
Meetings on glaciology, Zvenigorod, 1978 [1978, rus] **F-21386**
Resolutions of a Workshop of the Glaciological Section, Feb. 1978 [1978, rus] **F-21387**
Symposium on Physics and Chemistry of Ice and the meeting of the Council of the International Antarctic Glaciological Project [1978, rus] **F-21388**
Symposium on the History of Antarctic Glaciation [1978, rus] **F-21392**
Antarctic physiology [1978, jap] **H-20435**

Antarctic Treaty Consultative Meeting
Report of the Ninth Antarctic Treaty Consultative Meeting, London, 1977 [1978, eng] **M-20324**
Report of the Eighth Antarctic Treaty Consultative Meeting [1976, eng] **M-20590**

Committee on Space Research
Space conference in Konstanz—Scientific results on fisheries [1973, ger] **A-20938**

Dry Valley Drilling Project Seminar III
Dry Valley Drilling Project Seminar III, Tokyo [1978, eng] **E-21519**

Geological Society of America Annual Meeting
Geological Society of America 1975 annual meetings [1975, eng] **A-20269**
Geological Society of America Cordilleran Section, 70th Annual meeting [1974, eng] **E-20070**
Geological Society of America 1974 annual meetings [1974, eng] **E-20071**

International Antarctic Glaciological Project
Meeting of the Committee of the International Antarctic Glaciological Project (IAGP) in 1976 [1977, rus] **F-19576**

International Symposium on Isotopes and Impurities in Snow and Ice
International Symposium on Isotopes and Impurities in Snow and Ice, 1975 [1977, eng] **F-20107**

International Whaling Commission
Thirtieth annual meeting of the International Whaling Commission, 1978 [1979, eng] **B-21719**

Living Resources of the Southern Ocean
Living resources of Southern Ocean [1977, eng] **B-19456**

Polar Meteorology Workshop
Report of polar meteorology workshop, Reno, Nevada, 1975 [1976, eng] **I-21660**

Polar Oceans Conference
Polar Oceans conference proceedings [1977, eng] **J-20022**

Scientific Committee on Antarctic Research
[Reports of 12th SCAR meeting, Aug. 1972] [1972, eng] **A-19460**
Report of the SCAR executive meeting, Cambridge, UK, 6-7 July 1977 [1978, eng] **A-20326**
Documents of the 15th meeting [1978, eng] **A-20760**
Fifteenth meeting of SCAR, Chamonix, 16 to 26 May 1978 [1978, eng] **A-21155**

Scientific Committee on Antarctic Research. Working Group on Geology
SCAR Working Group on Geology [1978, eng] **E-20796**
SCAR Working Groups on Geology and Solid Earth Geophysics [1978, eng] **E-20797**

Scientific Committee on Antarctic Research. Working Group on Solid Earth Geophysics
SCAR Working Groups on Geology and Solid Earth Geophysics [1978, eng] **E-20797**
SCAR Working Group on Solid Earth Geophysics [1978, eng] **L-20795**

Symposium on Andean and Antarctic Volcanology Problems
Symposium on Andean and Antarctic volcanology problems [1976, eng] **E-20144**

Symposium on Antarctic Geology and Geophysics
Report on third symposium on Antarctic Geology and Geophysics [1977, eng] **A-19307**
Report on the 3rd Symposium on Antarctic Geology and Geophysics [1978, jap] **A-20440**
What future for antarctic geology [1977, eng] **E-19454**

Conjugate points
Magnetic quiet-day solar daily variations in magnetically conjugate regions [1977, eng] **K-19571**
Experiment communication and data transmission through the ATS-3 synchronous satellite [1977, eng] **K-19710**
Siple/Roberval VLF transmitting experiments [1977, eng] **K-19711**
European and American protonospheric electron content measurement [1978, eng] **K-19909**
Whistler precursors: a possible catalytic role of power line radiation [1977, eng] **K-19911**
Upper atmosphere research in Antarctica [1978, eng] **K-20291**
Energetic particle precipitation from the magnetosphere [1978, eng] **K-20293**
Recent progress in antarctic auroral studies [1978, eng] **K-20297**
Magnetospheric radiation from power lines [1975, eng] **K-20507**
Eastward movement of the structure of auroral radio absorption events in the morning sector [1976, eng] **K-20689**
Auroral x-rays in conjugate regions [1970, eng] **K-20698**
Wave characteristics of magnetic Pi2 pulsations in the auroral region [1978, eng] **K-20958**
Transmitter simulation of power line radiation effects in the magnetosphere [1978, eng] **K-20997**
Phenomenon of sporadic E-layer conjugation [1976, eng] **K-21008**
Polarization characteristics and phase differences of Pi2 pulsations at conjugate stations [1978, eng] **K-21018**
Magnetic activity and subauroral ELF-VLF chorus [1975, eng] **K-21164**
Magnetic quiet-day solar daily variations in magnetically conjugate regions [1977, eng] **K-21398**
The ARAKS project [1978, eng] **K-21408**
Optical observations systems for the ARAKS experiment [1978, eng] **K-21420**
Television system for observation of artificial aurorae in the conjugate region during the ARAKS experiment [1978, eng] **K-21421**
Belcher Islands Expedition—1971 [1971, eng] **K-21479**

Conservation
Krill—an immense but vulnerable source of protein [1971, eng] A-20058
Polar research: status and prospectus [1978, eng] A-20209
Discussion on scientific research in Antarctica [1977, eng] A-20272
Resource exploitation [1974, eng] A-20575
Race is on for Antarctica [1974, eng] A-20578
Land, air and sea—research in man's environment [1975, eng] A-20818
Reasonable utopias [1976, eng] A-20929
Exploiting antarctic mineral resources—technology, economics, and the environment [1978, eng] A-21470
First environmental impact monitoring amd assessment in Antarctica. The Dry Valley Drilling Project [1977, eng] B-19314
Whale conservation: role of the International Whaling Commission [1977, eng] B-19457
Whale stocks—exploitation or moratorium [1977, eng] B-19458
Ross seal *Ommatophoca rossi* (Gray 1850), with notes from the results of surveys conducted in the King Haakon VII Sea, Jan./Feb. 1974-76 [1977, eng] B-19461
Evaluation of possible United States involvement in an antarctic krill fishery [1976, eng] B-19895
Environmental impact in Antarctica [1978, eng] B-19978
Ross Ice Shelf Project environmental impact statement July, 1974 [1978, eng] B-19979
Environmental appraisal for the Dry Valley Drilling Project phases III, IV, V (1973-74, 1974-75, 1975-76) [1978, eng] B-19980
Summary of environmental monitoring and impact assessment of the DVDP [1978, eng] B-19982
Potential impact of harvesting zooplankton on the south circumpolar ecosystem [1978, eng] B-19985
Man's impact along the Antarctic Peninsula [1978, eng] B-19986
Living resources of the Southern Ocean [1977, eng] B-20001
Whale controversy: United States vs. Japan [1974, eng] B-20132
Problems in the conservation of polar marine mammals [1978, eng] B-20205
Conservation of antarctic living marine resources [1978, eng] B-20221
Role of krill in the antarctic marine ecosystem [1977, eng] B-20222
Conservation of southern ocean marine resources [1978, eng] B-20223
Conservation in the Antarctic [1977, eng] B-20275
Summary of the annual Adelie penguin census at Cape Royds [1978, eng] B-20317
In for the krill [1978, eng] B-20525
Conservation of antarctic seals and birds [1978, eng] B-20794
Population biology and the management of whales [1976, eng] B-20834
Goats on Auckland Islands [1978, eng] B-20903
Wildlife in the Antarctic [1978, eng] B-20925
Macquarie Island: a sub-Antarctic wonderland [1974, eng] B-21084
Whaling: past, present and future [1978, eng] B-21173
Shrimps offer a whale of a catch [1978, eng] B-21219
Marine living resources of the Southern Ocean [1978, eng] B-21471
Antarctic resources—effects of mineral exploration [1977, eng] E-19350
Potential environmental impact of diamond drilling [1976, eng] E-19463
Examination of radioactivity in the crushed rock from the PM-3A nuclear reactor site, McMurdo, Antarctica [1976, eng] G-20496
Problems of exploitation and conservation of the ocean [1977, rus] J-20517
[Press briefing] [1977, eng] M-19583
Legal status of the Antarctic [1976, eng] M-20189
Report of the Ninth Antarctic Treaty Consultative Meeting, London, 1977 [1978, eng] M-20324
Congressional hearings on whale conservation [1976, eng] M-20379
Congressional hearings on Antarctic Conservation Act [1978, eng] M-20380

Construction
Public works, *Deep Freeze* '77 [1977, eng] G-19732
Disposal of radioactive wastes in the antarctic ice sheet: an environmental impact assessment [1978, eng] G-19984
Field guide for portland cement concrete construction in Antarctica [1969, eng] G-21200
Public Works Department, *Deep Freeze* 78 [1978, eng] G-21644
Contractor support [1978, eng] G-21646
See also under: Ice; Sea ice; Shelf ice; Snow

BUILDING
Aluminum home for researchers [1977, ger] G-19367
Contractor support [1977, eng] G-19730
Portland cement concrete for Antarctica [1975, eng] G-20802
Concreting in Antarctica [1978, eng] G-20875
Sky-Hi Station report, Dec. 1961-Feb. 1962 [1962, eng] K-19743

DOCK
Controlled perimeter blasting in cold regions [1975, eng] G-19487

EQUIPMENT
Caulking compounds for application at low temperatures [1975, eng] G-20816

ROAD
Road transitions between land, snow and ice [1975, eng] G-20815
Snow transport equipment model 1000 towed snowplow carrier [1974, eng] G-20817

RUNWAY
Nansen Drift Station Project—remote sea-ice runway construction [1978, eng] F-19991
U.S. Antarctic Support study extension: Case 10—McMurdo Station-Outer Williams Field military construction and operation [1972, eng] G-20304
U.S. Antarctic support study extension: Case 11 [1972, eng] G-20305

STATION
Polar logistic support: the United States Navy [1978, eng] G-20208
Geodesic dome at Amundsen-Scott [1975, spa] G-20256
U.S. Antarctic Support study extension: Case 10—McMurdo Station-Outer Williams Field military construction and operation [1972, eng] G-20304
U.S. Antarctic support study extension: Case 11 [1972, eng] G-20305
Organization of the new Soviet station Molodezhnaya [1968, eng] G-20343
New South Pole station [1974, eng] G-20577

Continental drift
Baobabs: remnant of Gondwanaland [1977, eng] B-20580
Paleodistribution of marine isopods and continental drift [1979, eng] B-21394
Drift of the major continental blocks since the Devonian [1977, eng] E-19329
History of sediment lithofacies in the South Atlantic Ocean [1977, eng] E-19852
Fission track geochronology of King Island, Australia [1978, eng] E-19870
Further evidence for the Early Cretaceous breakup of Gondwanaland off southwestern Australia [1978, eng] E-19875
Antarctica and Gondwanaland [1978, eng] E-20201
Spreading history of the eastern Indian Ocean [1978, eng] E-20529
Pacific Mesozoic biogeography related to plate tectonics [1977, eng] E-20601
Revised reconstruction of the southern continents [1978, eng] E-20701
Fossils and the drifting continents [1976, eng] E-20846
Comparative study of bedrock in the Adelaide (Australia) and Ross (Antarctica) geosynclinal areas [1978, rus] E-21698
Comparison of geological structure of southeast Indostan and Sri Lanka with Enderby Land, Mac. Robertson Land and Princess Elizabeth Land in East Antarctica [1978, rus] E-21699
Deep sea drilling contributions to antarctic evolution studies [1977, eng] J-19638
Discovery of fossils at the South Pole supports the Gondwanaland hypothesis [1967, ger] L-19433
Northward motion of India since the Late Cretaceous [1978, eng] L-19802
Towards a more certain reconstruction of Gondwanaland [1977, eng] L-20278

Continental ice
See: Glacier ice; Ice sheet

Continental shelf
Sediments and sediment processes on high latitude continental shelves [1977, eng] **E-19868**
Thermal structure of antarctic continental slope waters around Molodezhnaya Station [1978, rus] **J-20649**
Geophysical studies in Antarctic waters with the *M.S. Explora* [1978, eng] **J-21710**
Offshore oil and gas in Antarctica [1977, eng] **M-21266**

Cooperation
See: International cooperation

Cores
See under: Firn; Glacier ice; Ice; Ice sheet; Sea ice; Shelf ice

Corpuscular radiation
See under: Solar activity

Cosmic noise absorption
Riometer records of 30 MHz cosmic noise at Syowa Station Antarctica in 1976 [1977, eng] **K-19361**
Ionospheric origin for Pi 1 micropulsations [1976, eng] **K-19575**
Magnetic fluctuations and ionosphere conductivity changes measured at Siple Station [1977, eng] **K-19715**
On high-latitude CNA, G-lacuna and SEC [1978, eng] **K-20099**
ULF and ionospheric conductivity variations during substorms [1978, eng] **K-20531**
Cosmic noise records at Showa Station, 1977 [1978, eng] **K-20998**

Cosmic rays
See: Radiation/Cosmic; Solar activity/Cosmic ray events

Crevasses
Ross Ice Shelf geophysical survey, 1976-1977 [1977, eng] **F-19686**
Iceberg thickness and crack detection [1978, eng] **F-20457**
Iceberg cleaving and fracture mechanics [1978, eng] **F-20460**
Antarctic ice sheet deformation [1978, rus] **F-20744**

Cruises
See: Expeditions

Crustacea
See: Arthropoda-Crustacea

Crustal studies
Circum-Antarctic marine geology [1977, eng] **E-19254**
Early phase of circum-Antarctic ocean basin evolution [1977, eng] **E-19255**
Kerguelen Plateau bathymetry, sediment distribution and crustal structure [1977, eng] **E-19260**
Sedimentation processes and acoustic stratigraphy in the Bellingshausen Basin [1977, eng] **E-19264**
Displacements between Australia, New Zealand, and Antarctica since the Late Cretaceous [1977, eng] **E-19265**
Evolution of the Scotia Arc [1977, eng] **E-19316**
Geological structure of the Transantarctic Mts. [1964, eng] **E-19508**
Present tectonics and Late Cenozoic evolution of New Zealand [1978, eng] **E-19810**
Nd and Sr isotope data on cal-alkaline andesites and plateau lavas from South America [1979, eng] **E-21224**
Model for ocean-floor metamorphism, seismic layering and magnetism [1976, eng] **E-21328**
Nature of the oceanic crust [1976, eng] **E-21330**
Marginal basin "rocas verdes" complex from southern Chile [1976, eng] **E-21332**
Mesozoic volcano-tectonic rift zone in southernmost South America [1978, eng] **E-21333**
Earth science investigations on the sixth continent [1978, ger] **F-20865**
Islas Orcadas cruise 12: Cape Town to Buenos Aires [1977, eng] **J-19633**
Crust and upper mantle dynamics in regions of continental glaciation [1969, rus] **L-19855**
Rb-Sr mantle isochrons and variations in the chemistry of Gondwanaland's lithosphere [1978, eng] **L-19879**
Bounding the thickness of the oceanic magnetized layer [1977, eng] **L-20013**
Basement morphology and rift geometry near the former junction of India, Australia, and Antarctica [1978, eng] **L-20062**
Gravity anomaly distributions and crustal structure [1978, eng] **L-20085**
Limitations of ophiolite complexes [1978, eng] **L-20624**
Gravity evidence for a major crustal fracture in eastern Antarctica [1976, eng] **L-20696**
Seismic wave research [1974, eng] **L-21193**
Gravimetric measurements in Antarctica and their interpretation [1978, rus] **L-21703**

Crystals
See under: Ice; Ice sheet; Snow

Currents
See under: Atmosphere; Ocean. *See also:* Ionosphere/Current systems

Cyclones and anticyclones
Oxygen isotopic composition of the surface snow in Mizuho Plateau [1978, eng] **F-19838**
Factors controlling oxygen isotopic composition of fallen snow in Antarctica [1978, eng] **F-19880**
Cloud seeding and potential weather impacts [1978, eng] **F-20484**
Observations of sea-salt particles in the air in Mizuho Plateau [1978, eng] **I-19828**
Atmospheric processes in the southern hemisphere [1977, rus] **I-19883**
Reanalysis of synoptic maps of the South Pacific and Atlantic Oceans from April 1967 to March 1968 [1969, spa] **I-20214**
Features of atmospheric processes over the Drake Passage and nearby portions of the Southern Ocean, summer 1976 [1978, rus] **I-20642**
Results of a vertical atmospheric profile on the Bellingshausen-Molodezhnaya route (Nov. 1973) [1978, rus] **I-20741**
Features of aviation meteorology in Antarctica [1978, rus] **I-20742**
Katabatic wind in the Molodezhnaya Station area and forecasting it [1978, rus] **I-20764**
Satellite cloud mosaics for the Southern Hemisphere [1978, eng] **I-20884**
Measurements of surface ozone at Mirnyy, Antarctica [1978, ger] **I-21290**
Northern and Southern Hemisphere differnces in pressure and temperature [1978, eng] **I-21341**
Tropospheric jet streams in Antarctica [1978, rus] **I-21456**
See also: Atmosphere/Disturbances

Data centers
New computer system of the National Institute of Polar Research [1977, eng] **A-19530**
Language distribution of antarctic literature [1977, eng] **A-19725**
Catalogue of data and publications on the Arctic and Antarctic; Vols. 1, 3-6 [1976, rus] **A-19881**
Automatic data processing at Molodezhnaya [1977, rus] **A-19890**
Environmental inventories Antarctic area [1978, eng] **A-21359**
Searching on-line data bases for the *Antarctic Bibliography* [1978, eng] **A-21637**
Studies in polar biology [1977, eng] **B-19618**
Polar biological specimens [1978, eng] **B-21641**
Central ice core storage facility and information exchange [1977, eng] **F-19693**
Inventory of archived data [1969, eng] **J-21213**

Data processing
Documents retrieval system at National Institute of Polar Research [1978, eng] **A-20089**
Conversational system of spectrum analysis by the use of graphic display [1978, jap] **A-20826**
Construction of polar data-base system [1978, jap] **A-20830**
Environmental inventories Antarctic area [1978, eng] **A-21359**
Searching on-line data bases for the *Antarctic Bibliography* [1978, eng] **A-21637**
Design and operation of the ice core data bank [1976, eng] **F-20604**
Logistics and buoys in the first GARP global experiment [1978, eng] **G-20417**
Experimental use of computers for data analysis in medical geographical research [1978, rus] **H-20614**

Collecting and processing hydrometeorological data in polar regions [1978, rus] I-20613
Aerological stations in southern high latitudes [1977, rus] I-21268
Data processing for auroral electron analysis [1979, jap] K-21678

Dating
See: Age determination; Geochronology

Dawn chorus
See under: VLF emissions

Deformation
See under: Glacier ice; Ice; Ice sheet; Shelf ice; Snow

Density
See under: Atmosphere; Firn; Hoarfrost; Ice; Ice sheet; Sea ice; Sea water; Snow

Dentistry
Dental problems in Antarctica [1976, eng] H-19352
Analysis of saliva and the oral cavity [1977, rus] H-19894
Clinical features of stomatological disease in antarctic personnel [1978, rus] H-21044

Development
See: Economic development

Diatoms
See: Thallophyta-Algae

Diesel
See under: Engines

Diseases
See: Pathology

Distances
Geodetic and meteorological investigations of ground refraction over antarctic continental ice [1978, rus] C-21463

Distribution
See under: Ice; Ice sheet; Icebergs; Pack ice; Polynyas; Sea ice; Shelf ice; Snow. *See also:* Geographic distribution

Disturbances
See under: Atmosphere. *See also:* Cyclones and anticyclones; Geomagnetic disturbances; Ionosphere/Storms

Diving
Antarctic marine biological research by divers [1978, rus] B-20680

Docks
See: Construction/Dock

Dogs
Snow [1978, eng] A-19862
First landing at Ongul Island [1978, jap] A-20433
First wintering party of the JARE [1978, jap] D-19768
Snow dogs [1978, eng] G-20715

Drifting
See under: Icebergs; Pack ice; Sea ice; Snow. *See also:* Continental drift

Drilling
See under: Glacier ice; Ice; Ice sheet; Shelf ice

Earth
Extension behind island arcs and motions relative to hot spots [1978, eng] E-21053
Heat balance of the Earth [1978, eng] I-21189
Rodriguez, Darwin, Amsterdam, ... a second type of hotspot island [1978, eng] L-21052

CRUST
See: Crustal studies

DIMENSIONS
Description of the T.A.A.F. geodesic network, Kerguelen Islands [1976, fre] L-20351

HEAT FLOW
Sedimentary geochemical processes near the Pacific-Antarctic Ridge [1977, eng] E-19641
Geothermal studies in Antarctica [1977, eng] E-19657
Heat flow in the Weddell Sea [1978, eng] J-21572
Heat flow on the Pacific-Antarctic Ridge [1978, eng] L-21019

MANTLE
See: Mantle studies

ROTATION
Free oscillations of the Earth and tilt at the South Pole [1978, eng] L-21526

Earthquakes
See: Seismology

Echinodermata
Note on an echinoid from Gough Island, South Atlantic [1968, eng] B-21063
Benthic fishes and echinoderms in the Scotia Arc region [1978, eng] B-21584
Antarctic and southernmost South American fossil echinoids [1977, eng] E-19643

BREEDING CYCLES AND REPRODUCTION
Reproductive periodicities in a common Antarctic asteroid [1965, eng] B-19252
Viviparous echinoderms from the South Atlantic [1965, spa] B-19412

ECOLOGY
Ecology of some antarctic benthic fishes and echinoderms [1977, eng] B-19607

GEOGRAPHIC DISTRIBUTION
Reproductive periodicities in a common Antarctic asteroid [1965, eng] B-19252
Antarctic echinoderms. III. Ophiuroidea 1. Ophiuroidea of the extreme north of the Antarctic Peninsula [1974, spa] B-19332
Viviparous echinoderms from the South Atlantic [1965, spa] B-19412
Ophiuroidea [1967, eng] B-19959
Deep-sea urchins of the northern Pacific Ocean [1976, rus] B-20231
Erimicaster gracilis (Sladen, 1883) (Asteroidea, Porcellanasteridae) in the Antarctic Ocean [1977, spa] B-21431

MORPHOLOGY
Reproductive periodicities in a common Antarctic asteroid [1965, eng] B-19252
Ophiuroidea [1967, eng] B-19959

PHYSIOLOGY
Growth stages of *Ophionotus hexactis* during intraovarian incubation [1979, eng] B-21174

TAXONOMY
New species of antarctic ophiuroid: *Ophiurolepis granulifera* sp. nov. (Ophiuroidea, Ophiuridae) [1977, spa] B-19573
Ophiuroidea [1967, eng] B-19959
Deep-sea urchins of the northern Pacific Ocean [1976, rus] B-20231
New species of antarctic ophiuroid: *Ophiomastus trispinosus* sp. nov. (Ophiuroidea, Ophiuridae) [1977, spa] B-21430

Ecology
Antarctica. An information paper presented by Senator the Honourable J.J. Webster, Minister for Science [1977, eng] A-19269
Polar research: status and prospectus [1978, eng] A-20209
Discussion on scientific research in Antarctica [1977, eng] A-20272
Reasonable utopias [1976, eng] A-20929
First environmental impact monitoring amd assessment in Antarctica. The Dry Valley Drilling Project [1977, eng] B-19314
Wildlife in the Falklands [1972, eng] B-19446
Living resources of Southern Ocean [1977, eng] B-19456
Lipid composition of *Chorismus antarcticus* [1977, eng] B-19471
Ecosystem studies and mathematical model for Lake Bonney [1977, eng] B-19610
Baseline microbiological data for soils of the Dufek Massif [1977, eng] B-19611

Ecology *(cont.)*

Microorganisms in antarctic desert rocks from dry valleys and Dufek Massif [1977, eng] **B-19612**
Microbial distribution and activity in and around McMurdo Sound [1977, eng] **B-19613**
Ross Ice Shelf Project—benthic biology, 1976-1977 [1977, eng] **B-19614**
Ecosystem modeling for the southern ocean [1977, eng] **B-19615**
Phytoplankton studies in the water column and in the pack ice of the Weddell Sea [1977, eng] **B-19616**
Foraminiferal species obtained from Deception Island [1977, eng] **B-19617**
History and status of goats on the Auckland Islands [1977, eng] **B-19806**
Environmental impact in Antarctica [1978, eng] **B-19978**
Ross Ice Shelf Project environmental impact statement July, 1974 [1978, eng] **B-19979**
Environmental appraisal for the Dry Valley Drilling Project phases III, IV, V (1973-74, 1974-75, 1975-76) [1978, eng] **B-19980**
Summary of environmental monitoring and impact assessment of the DVDP [1978, eng] **B-19982**
Potential impact on Lake Bonney of activities associated with modeling freshwater antarctic ecosystems [1978, eng] **B-19983**
Potential impact of harvesting zooplankton on the south circumpolar ecosystem [1978, eng] **B-19985**
Man's impact along the Antarctic Peninsula [1978, eng] **B-19986**
Man's impact on antarctic birds [1978, eng] **B-19987**
Marine biology. Vol.2. Biological productivity of the ocean [1977, rus] **B-20017**
Ecosystem diversity differences: poles and tropics [1977, eng] **B-20038**
Dissimilar and similar trends in antarctic and arctic marine benthos [1977, eng] **B-20040**
Cocconeis diatom on the skin of Franciscana [1977, eng] **B-20094**
Animal-plant-soil nutrient relationships on Marion Island (Subantarctic) [1978, eng] **B-20165**
Primary productivity and estimates of potential yields of the Southern Ocean [1978, eng] **B-20204**
Problems in the conservation of polar marine mammals [1978, eng] **B-20205**
Terrestrial adaptations in polar regions [1978, eng] **B-20207**
Conservation of antarctic living marine resources [1978, eng] **B-20221**
Role of krill in the antarctic marine ecosystem [1977, eng] **B-20222**
Terrestrial ecosystems in the Antarctic [1977, eng] **B-20273**
Place of the Antarctic in biological sciences [1977, eng] **B-20276**
Tardigrada of New Zealand [1978, eng] **B-20549**
Littoral ecology of Marion and Prince Edward Islands (Southern Ocean) [1976, eng] **B-20835**
Sea ice organisms and their importance to the antarctic ecosystem (Review) [1978, eng] **B-20878**
Ecological investigations of yeasts in antarctic soils [1978, eng] **B-20900**
Taxonomy of antarctic bacteria from soils and air primarily of the McMurdo Station and Victoria Land dry valleys region [1978, eng] **B-20901**
Goats on Auckland Islands [1978, eng] **B-20903**
Islands in the wind [1977, eng] **B-20915**
Barotolerance of psychrophilic marine vibrio in antarctic waters [1978, eng] **B-20978**
Effects of starvation on a psychrophilic marine vibrio [1976, eng] **B-20992**
Survival of a psychrophilic marine vibrio under long-term nutrient starvation [1977, eng] **B-20993**
Life in the deep south [1978, eng] **B-21080**
Harvesting: ecological and energy considerations [1978, eng] **B-21081**
BIOMASS [1978, eng] **B-21082**
Microbial life at low temperatures: ecological aspects [1978, eng] **B-21169**
Lichen-invertebrate associations [1977, eng] **B-21176**
Biology of an antarctic aquatic moss community [1978, eng] **B-21289**
Ecology of a subantarctic island: 15 years on [1978, eng] **B-21318**
Exploring Macquarie Island. Part 1. Southern wildlife outpost [1978, eng] **B-21373**
Exploring Macquarie Island. Part 2. Subantarctic refuge [1978, eng] **B-21374**
Ecology of the Southern Ocean region [1978, eng] **B-21472**
Long-term experimental benthic studies in McMurdo Sound [1978, eng] **B-21583**
Ecosystem comparisons of oasis lakes and soils [1978, eng] **B-21605**
Biostratigraphy and paleoecology of Neogene and Oligocene silicoflagellates [1974, eng] **E-19282**
Antarctic resources—effects of mineral exploration [1977, eng] **E-19350**
Oceanic micropalaeontology [1977, eng] **E-20563**
Recent planktonic foraminifera [1977, eng] **E-20564**
Investigations at dome C in the austral summer of 1976-1977 [1977, eng] **F-19678**
Ice age, past and present [1977, eng] **F-19863**
Non-biogenic fixed nitrogen in Antarctica and some ecological implications [1978, eng] **F-19915**
Ecological aspects of iceberg transport from antarctic waters [1978, eng] **F-20485**
Weather modification and environmental and ecological impact (caused by towed icebergs) [1978, eng] **F-20489**
Disposal of radioactive wastes in the antarctic ice sheet: an environmental impact assessment [1978, eng] **G-19984**

See also under: Arthropoda; Arthropoda-Arachnida; Arthropoda-Crustacea; Arthropoda-Insecta; Aves; Aves-Charadriiformes; Aves-Procellariiformes; Aves-Sphenisciformes; Bryophyta; Bryophyta-Musci; Bryozoa; Echinodermata; Mammalia; Mammalia-Pinnipedia; Mollusca; Pisces; Protozoa; Spermatophyta; Thallophyta; Thallophyta-Algae; Thallophyta-Lichens; Vermes

FAUNAL

Antarctic radiolaria and the late Tertiary and Quaternary history of the Southern Ocean [1964, eng] **B-19253**
Trematoda: Notocotylidae from the Sheathbill [1969, eng] **B-19339**
Trematode parasites of the Sheathbill [1968, eng] **B-19340**
Nematode and acanthocephalan parasites of the Sheathbill [1969, eng] **B-19342**
Wing loadings, wing shapes, and flight capabilities of Procellariiformes [1977, eng] **B-19421**
Temperature adaptation in fish myofibrillar ATPases [1977, eng] **B-19448**
Diurnal rhythm of activity by the Adelie penguin [1977, eng] **B-19450**
Antarctic marine secondary production and the phenomenon of cold adaptation [1977, eng] **B-19473**
Oxygen consumption of *Alaskozetes antarcticus* [1977, eng] **B-19482**
Diving behavior of fur seals and king penguins [1977, eng] **B-19596**
Colonial behavior of antarctic marine mammals in eastern McMurdo Sound [1977, eng] **B-19597**
Behavioral and ecological adaptations in pygoscelid penguins [1977, eng] **B-19600**
Seabirds in antarctic marine ecosystems [1977, eng] **B-19604**
Ecological and behavioral adaptations to antarctic environments [1977, eng] **B-19605**
Ecology of some antarctic benthic fishes and echinoderms [1977, eng] **B-19607**
Processes organizing contrasting benthic communities of McMurdo Sound [1977, eng] **B-19608**
Feeding territories and breeding success of South Polar skuas [1978, eng] **B-19811**
Antarctic krill resource: prospects for commercial exploitation [1978, eng] **B-19864**
Evaluation of possible United States involvement in an antarctic krill fishery [1976, eng] **B-19895**
Results of the third seal survey in the King Haakon VII Sea, Antarctica [1976, eng] **B-19896**
Design and application of a coded format for recording observations of cetaceans at sea [1976, eng] **B-19897**
Giant-petrels in the South Atlantic: new data from Gough Island [1976, eng] **B-19899**
Notes on seabirds at Gough Island [1976, eng] **B-19900**
Seasonal and spatial distribution of the Antarctic Tern in South Africa [1976, eng] **B-19903**
Lipid sacs as a buoyancy adaptation in an antarctic fish [1978, eng] **B-19906**
Birds of the 1976-77 Snares Islands expedition [1977, eng] **B-19907**
Notes on New Zealand bird species [1977, eng] **B-19908**

Genetic variation in wild house mice [1978, eng] B-19940
Living resources of the Southern Ocean [1977, eng] B-20001
Diurnal activity of Adelie penguins at Cape Bird [1978, eng] B-20016
Food of Bryde's whales [1977, eng] B-20093
Bivalve mollusc *Limatula:* a review [1978, eng] B-20101
Physiology and biochemistry of low temperature adaptations in polar marine ectotherms [1978, eng] B-20206
Summer respiration of an antarctic amphipod [1973, eng] B-20218
Respiration of invertebrates and fishes under hypostenothermic conditions [1975, eng] B-20220
Conservation of southern ocean marine resources [1978, eng] B-20223
Breeding of antarctic terns at the Snares Islands, New Zealand [1978, eng] B-20237
Physiological adaptation in antarctic fishes [1978, eng] B-20314
Population changes in Adelie penguins [1978, ger] B-20406
Predation on foraminifera by antarctic fish [1978, eng] B-20536
New Zealand Diapriinae [1978, eng] B-20543
Nesting behavior of *Harpagifer bispinis* [1978, eng] B-20546
Recent foraminifera [1976, eng] B-20548
Fur seal haematology [1978, eng] B-20551
Beaks, nets and numbers [1977, eng] B-20554
Revision of the South American Zoarcidae (Osteichthyes, Blennioidei) [1977, eng] B-20556
Description of 2 species of *Notolepis* [1978, ger] B-20559
Activity patterns and social behavior of non-breeding Adelie penguins [1978, eng] B-20621
Adelie penguin embryonic development [1978, eng] B-20632
Conversion of sustainable yield curve for whale population [1976, eng] B-20659
More flexible model for baleen whale populations [1976, eng] B-20660
Reindeer in the Antarctic [1978, eng] B-20714
More about krill [1978, eng] B-20716
Antarctic freshwater rotifers [1977, eng] B-20785
Feral pigs on Auckland Island [1975, eng] B-20837
Note on the food of feral pigs *(Sus scrofa)* of Auckland Island [1976, eng] B-20838
Nonasellote isopod crustaceans from Anvers Island and other antarctic locations [1978, eng] B-20852
Isolated population of Weddell seals [1972, eng] B-20893
Recent data on the fauna of Saint Paul and New Amsterdam Islands [1972, fre] B-20894
Animals of the antarctic islands [1973, eng] B-20906
Wildlife in the Antarctic [1978, eng] B-20925
Populations of introduced arthropods at Australian antarctic stations [1978, eng] B-20994
Macquarie Island: a sub-Antarctic wonderland [1974, eng] B-21084
Geology and the distribution of Macaroni penguin colonies at Marion Island [1978, eng] B-21154
Ecological interactions in the Southern Ocean [1979, eng] B-21225
Cool California penguins [1979, eng] B-21261
Illustrated introduction to antarctic wildlife [1976, ita] B-21382
Species composition and zoogeographic analysis of bottom fish fauna in the Scotia Sea [1977, rus] B-21433
Biological studies of antarctic krill, austral summer, 1977-1978 [1978, eng] B-21581
Antarctic krill: ecology and commercial exploitation [1978, eng] B-21582
Benthic fishes and echinoderms in the Scotia Arc region [1978, eng] B-21584
Birds of the Weddell Sea [1978, eng] B-21587
Winter observations of birds at Palmer Station in 1977 [1978, eng] B-21588
Impact of unfavorable ice conditions on bird productivity [1978, eng] B-21589
Behavioral and ecological adaptations in pygoscelid penguins [1978, eng] B-21591
Establishment of a penguin colony and controlled environment breeding of Adélie penguins [1978, eng] B-21594
Colonial behavior of the Weddell seal in eastern McMurdo Sound [1978, eng] B-21599
Seals of the antarctic pack ice [1978, eng] B-21600
Paleoclimatic history in deep-sea cores [1972, eng] E-19423
Chlamys delicatula and *Jacquinotia edwardsii* [1977, eng] E-19465
Fossil occurrence of *Jacquinotia edwardsii* [1977, eng] E-19466
Paleontological investigations in the Ellsworth Mountains [1977, eng] E-19668
Zoogeographic and taxonomic review of euthecosomatous Pteropoda [1977, eng] E-20566
Ecology and distribution of Recent radiolaria [1977, eng] E-20567
Application of transfer functions to Indian Ocean planktonic foraminifera [1978, eng] E-20803
Proto-lizards from the Triassic of Antarctica [1978, eng] E-21512

FLORAL

Plant communities near Showa related to water supply and soil [1977, jap] B-19297
Moss and lichen communities near Showa [1977, jap] B-19298
Plant distribution on W. Ongul and Teöya Islands [1977, jap] B-19299
Microsporum magellanicum and *Cunninghamella antarctica* [1977, eng] B-19312
Classification of terrestrial vegetation near McMurdo Sound, continental Antarctica [1973, eng] B-19396
Influence of reindeer on the vegetation of South Georgia [1976, eng] B-19560
Transfer of New Zealand *Tylotus proliferus* to the genus *Gracilaria* [1977, eng] B-19807
Novelties in Australian *Epilobium* (Onagraceae) [1977, eng] B-19808
History and recent advances in the study of ice biota [1977, eng] B-20035
Organic life in sea ice [1977, eng] B-20036
Seasonal changes in sea ice algae near Showa Station [1977, eng] B-20037
Two new lichens from Marion Island, southern Indian Ocean [1976, eng] B-20096
Lichens of Marion and Prince Edward Islands, southern Indian Ocean [1976, eng] B-20097
Studies on the bryoflora of Macquarie Island, II [1978, eng] B-20411
Bacterial flora of antarctic krill [1978, eng] B-20504
Altitudinal distribution and phenology of Marion Island vascular plants [1970, eng] B-20586
Case for controlling the distribution of the tree daisy *(Olearia lyallii)* Hook.f. in its type locality, Auckland Island [1976, eng] B-20839
Ecology of marine planktonic diatoms [1977, eng] B-21055
Lichens of cold deserts [1977, eng] B-21177
Role of lichens in antarctic ecosystems [1978, eng] B-21228
Corybas macranthus (Hook.f.) Reichb.f. (Orchidaceae), a new record for Macquarie Island [1978, eng] B-21284
Studies on the ecology of the vegetation at Mawson Station, Antarctica [1978, eng] B-21323
Origin of the New Zealand mountain flora [1978, eng] B-21356
Palynomorph preservation in the Beacon Supergroup of the Transantarctic Mountains [1977, eng] E-19670
Last-abundant-appearance of a diatom in the Subantarctic [1978, eng] E-19988
Late Neogene diatom biostratigraphy and paleoecology of the dry valleys and McMurdo Sound, Antarctica [1977, eng] E-19998
Palynostratigraphy of the Victoria group of South Victoria Land, Antarctica [1977, eng] E-20756
Additional postglacial pollen diagram from Patagonia Occidental [1972, eng] E-20905
Report on an archaeological expedition in Magallanes (Dec. 14, 1976—Jan. 6, 1977) [1976, spa] E-21329
Tertiary climatic evolution and vegetation history in the southeast Indian Ocean region [1978, eng] I-20184

Economic development

Antarctica. An information paper presented by Senator the Honourable J.J. Webster, Minister for Science [1977, eng] A-19269
Uncertain future of the Falkland Islands [1977, eng] A-19336
Antarctic riches—for whom [1977, eng] A-19438
Attention on Antarctica [1977, eng] A-19439
Antarctic enlightenment [1977, eng] A-19440
Research and exploration of the resources of krill and food fish in the Antarctic [1977, eng] A-19515
Mining in Antarctica [1976, eng] A-19737
Offshore development for oil and gas in Antarctica [1978, eng] A-19756
Krill rush: tiny fish puts Antarctica up for grabs [1978, eng] A-19866
Prospects for the industrial exploitation of Antarctica [1976, rus] A-20005

Economic development *(cont.)*
Polar research: status and prospectus [1978, eng] **A-20209**
Discussion on scientific research in Antarctica [1977, eng] **A-20272**
Resource exploitation [1974, eng] **A-20575**
Race is on for Antarctica [1974, eng] **A-20578**
Economic development of Antarctica [1977, eng] **A-20595**
Uses of Antarctica [1977, eng] **A-20833**
Reasonable utopias [1976, eng] **A-20929**
Exploiting antarctic mineral resources—technology, economics, and the environment [1978, eng] **A-21470**
Manufacture of krill protein concentrate [1977, jap] **B-19511**
Antarctic krill resource: prospects for commercial exploitation [1978, eng] **B-19864**
Evaluation of possible United States involvement in an antarctic krill fishery [1976, eng] **B-19895**
Potential impact of harvesting zooplankton on the south circumpolar ecosystem [1978, eng] **B-19985**
Man's impact along the Antarctic Peninsula [1978, eng] **B-19986**
Krill meal as poultry feed [1976, rus] **B-19994**
Harvesting of krill [1977, eng] **B-20002**
Utilization of krill [1977, eng] **B-20003**
Marine biology. Vol.2. Biological productivity of the ocean [1977, rus] **B-20017**
Problems in the conservation of polar marine mammals [1978, eng] **B-20205**
Conservation of antarctic living marine resources [1978, eng] **B-20221**
Role of krill in the antarctic marine ecosystem [1977, eng] **B-20222**
Conservation in the Antarctic [1977, eng] **B-20275**
Effect of a new food product, krill paste, on chemical carcinogenesis [1976, rus] **B-20431**
Biological resources of the world ocean and the prospects for their use [1978, eng] **B-20511**
Harvesting: ecological and energy considerations [1978, eng] **B-21081**
BIOMASS [1978, eng] **B-21082**
Antarctic fisheries [1978, eng] **B-21151**
Whaling: past, present and future [1978, eng] **B-21173**
Marine living resources of the Southern Ocean [1978, eng] **B-21471**
Antarctic krill: ecology and commercial exploitation [1978, eng] **B-21582**
Studying Southern Ocean biological resources [1978, rus] **B-21706**
Geology and geological research in Antarctica—1. East Antarctica [1975, ger] **E-19397**
Polar mining [1975, eng] **E-20888**
Antarctic mineral resources [1978, eng] **E-21079**
Energy search turns to Antarctic [1978, eng] **E-21235**
Mineral resources and geopolitics in Antarctica [1979, eng] **E-21652**
Is there an iceberg in your future [1977, eng] **F-20300**
Iceberg utilization [1978, eng] **F-20448**
Challenges of iceberg utilization [1978, eng] **F-20449**
Icebergs - a natural resource [1978, eng] **F-20451**
Role of iceberg utilization research and development in enhancing the transfer of technology in Saudi Arabia [1978, eng] **F-20474**
Making decisions on iceberg utilization [1978, eng] **F-20475**
Pilot program for exporting antarctic icebergs [1978, eng] **F-20477**
Role of iceberg utilization in solving the Saudi Arabian water problems [1978, eng] **F-20478**
Some international implications of iceberg transfer [1978, eng] **F-20481**
Legal/political aspects of antarctic iceberg utilization [1978, eng] **F-20482**
Aspects of transporting icebergs from Antarctica to the United States [1978, eng] **F-20483**
Cloud seeding and potential weather impacts [1978, eng] **F-20484**
Energy conservation, water quality, and legal aspects of iceberg utilization [1978, eng] **F-20490**
Icebergs to Arabia [1978, eng] **F-20713**
Water supply and weather modifications through the use of transported icebergs from the Antarctic [1977, eng] **G-20904**
Nuclear power reactor at McMurdo [1978, eng] **G-20945**
Polar transportation requirements study report, Vol.3 [1968, eng] **G-21208**
Polar transportation requirements study report, Vol.2 [1968, eng] **G-21209**
Problems of exploitation and conservation of the ocean [1977, rus] **J-20517**
Modelling the exclusive economic zone enforcement problem [1978, eng] **J-21285**
Report on Ninth Consultative Meeting of the Antarctic Treaty [1977, eng] **M-19324**
[Press briefing] [1977, eng] **M-19581**
[Press briefing] [1977, eng] **M-19582**
[Press briefing] [1977, eng] **M-19583**
Congressional hearings on Antarctic Conservation Act [1978, eng] **M-20380**
International cooperation under the Antarctic Treaty [1978, eng] **M-20789**
Antarctica: geopolitical football [1977, eng] **M-20832**
Antarctica, the Southern Ocean, and the law of the sea [1977, eng] **M-21065**
Antarctica: conflict or compromise [1978, eng] **M-21075**
Offshore oil and gas in Antarctica [1977, eng] **M-21266**
Trends and prospects for regimes for living and mineral resources in the Antarctic [1979, eng] **M-21369**
The antarctic regime: an introduction [1978, eng] **M-21468**
Recommended approach to the antarctic resource problem [1978, eng] **M-21473**
Antarctic system and the utilization of resources [1978, eng] **M-21474**
The international community and Antarctica [1978, eng] **M-21475**
Antarctica and the questions of the exploitation of its resources [1977, eng] **M-21654**

Economic geology
Mining in Antarctica [1976, eng] **A-19737**
Offshore development for oil and gas in Antarctica [1978, eng] **A-19756**
Exploiting antarctic mineral resources—technology, economics, and the environment [1978, eng] **A-21470**
Antarctic resources—effects of mineral exploration [1977, eng] **E-19350**
Geology of the Scott Glacier and Wisconsin Range area [1967, eng] **E-19398**
Potential environmental impact of diamond drilling [1976, eng] **E-19463**
Polar mining [1975, eng] **E-20888**
Mineral resources and geopolitics in Antarctica [1979, eng] **E-21652**

Electrical properties
See under: Firn; Glacier ice; Ice; Shelf ice; Snow

Electricity
See under: Atmosphere. *See also:* Power/Electric

Electrojets
Dual coherent auroral radar observations from Siple Station, Antarctica [1977, eng] **K-19713**
Effect of induced currents in the sea on magnetic bays [1978, eng] **K-20285**
Wave characteristics of magnetic Pi2 pulsations in the auroral region [1978, eng] **K-20958**
Geomagnetic bays in Antarctica [1977, rus] **K-21136**
Auroral infrasonic waves and the auroral electrojet [1979, eng] **K-21283**
Observation of precipitating electrons on board the S-310JA-2 [1979, jap] **K-21675**

Electron density
See under: Ionosphere

Electronic apparatus
Conversational system of spectrum analysis by the use of graphic display [1978, jap] **A-20826**
Construction of polar data-base system [1978, jap] **A-20830**
Behavior of krill *(Euphausia superba* Dana) [1978, ger] **B-21450**
Iceberg thickness profiling [1978, eng] **F-19755**
Research-configured LC-130R airplane [1977, eng] **G-19729**
Radar and satellite communications system at Palmer Station [1978, eng] **G-19757**
LABEL, Upper Atmosphere Physics Laboratory, General Belgrano Station [1973, eng] **G-19951**

Logistics and buoys in the first GARP global experiment [1978, eng] G-20417
Antarctic airborne radio echo sounding, 1977-78 [1978, eng] G-21152
New 60-megahertz antenna array for radio echo sounding [1978, eng] G-21643
Transmitting ECG's from Antarctica to Moscow by radio [1977, rus] H-21146
Automatic Weather Station in Antarctica [1977, eng] I-19362
Air-sea interaction studies using an X-band radar at Palmer Station [1977, eng] I-19707
Data acquisition from EXOS-A (Kyokkô) at Syowa Station, Antarctica [1978, jap] I-20827
Meteorological data gathered by ARDS [1978, eng] I-21006
Geophysical monitoring for climatic change, No.6. Summary report 1977 [1978, eng] I-21405
Dual coherent auroral radar observations from Siple Station, Antarctica [1977, eng] K-19713
Satellite link between Palmer Station and Nevada [1977, eng] K-19728
Unmanned geophysical observatory for antarctic operation [1972, eng] K-20555
Jupiter: a new tool for magnetospheric research [1978, eng] K-21630

Elevation
See: Altimetry

Embryology
See under: Aves-Sphenisciformes

Emissions
See: VLF emissions

Engines
Polar Star—the second time around [1978, eng] G-20856
Suitability of JATO aircraft motor for antarctic use [1978, eng] G-21123
Icebreaker propulsion systems feasibility study [1967, eng] G-21201

DIESEL
Polar icebreaker preliminary structural design and special studies [1968, eng] G-21206

Equipment
Fishing gear techniques to catch krill and fish in the Scotia Sea [1978, ger] A-21449
Behavior of krill *(Euphausia superba* Dana) [1978, ger] B-21450
Processing and product development [1978, ger] B-21451
Core splitter for Argentine-U.S. coring program [1978, eng] E-21640
Nansen Drift Station Project—remote sea-ice runway construction [1978, eng] F-19991
Ice crystals in the Antarctic atmosphere [1976, eng] F-20307
Potential application of remote sensing in locating and tracking of antarctic icebergs [1978, eng] F-20458
Feasibility of using paddle-wheels for the propulsion of icebergs [1978, eng] F-20466
High efficiency iceberg propulsion systems [1978, eng] F-20468
Osmotic propulsion of icebergs [1978, eng] F-20469
Self propelled iceberg [1978, eng] F-20470
Iceberg protection by foamed insulation [1978, eng] F-20472
Use of floating solar collectors in processing iceberg water [1978, eng] F-20473
Studying the antarctic ice sheet by radio-echo sounding [1978, rus] F-20679
Selecting drills for microbiological studies of deep glacier layers at Vostok Station [1978, rus] F-20726
Outline of the drilling operation at Mizuho Station [1978, eng] F-21298
Access hole drilling through the Ross Ice Shelf [1978, eng] F-21536
Ice excavation machine [1977, eng] G-20776
Radio communications for travellers on the Arctic Ocean [1978, eng] G-20790
Suitability of JATO aircraft motor for antarctic use [1978, eng] G-21123
Antarctic airborne radio echo sounding, 1977-78 [1978, eng] G-21152
See also: Construction/Equipment; Electronic apparatus; Engines; Skis; Vehicles

MAINTENANCE
Public Works Department, *Deep Freeze* 78 [1978, eng] G-21644

Eustasy
Phosphatic nodule beds in Victoria and the late Miocene-Pliocene eustatic event [1978, eng] E-20961
Gondwanan glaciation, cyclothems, continental positioning, and climate change [1978, eng] E-21005
Messinian salinity crisis: evidence of Late Miocene eustatic changes in the world ocean [1978, eng] J-20594
See also: Glacial eustasy; Isostasy

Evaporation
Meteorological constraints on hydrology studies in the dry valleys, Antarctica [1976, eng] I-21669

Evolution
Early mammals in South America [1978, eng] B-20918
See also under: Arthropoda-Arachnida; Aves-Sphenisciformes; Mammalia; Mollusca

Excavations
See under: Ice

Exchange scientists

Gillmor, C.S.
American ham operator at Mirnyy [1979, eng] G-21711

Grew, E.S.
With the Soviets in Antarctica, austral summer 1976-1977 [1977, eng] E-19648

Yoshida, Y.
Working with the British Antarctic Survey [1978, jap] A-20442

Exhibits
See: Museums and exhibits

Expeditions
Polar Rosses: John and James Clark Ross and their explorations [1973, eng] A-19493
From Greenland to Antarctica; in memory of Fritz Loewe [1975, ger] A-19799
List of Royal Geographic Society archives on Antarctica [1976, eng] A-20006
Scott's men [1977, eng] A-20864
Traditions and current tasks of polar research [1978, ger] A-20887
First krill expedition of the Federal Republic of Germany to antarctic waters [1975, ger] A-20942
Research in Antarctica [1978, eng] A-21076
Voyages to the Kerguelen Islands from 1772-1950 [1976, fre] D-20348
Antarctic expedition of 1977-1978 in preparation [1977, ger] D-20974
Journal of the Resolution's voyage in 1771-1775 [1967, eng] D-21181
Chronicles of the South Atlantic: Patagonia, Falkland Islands and Antarctica [1974, spa] M-20174
See also: Traverse operations

Argentine Antarctic Expedition
Accident-plagued 1974-75 antarctic campaign [1975, spa] D-20254

Australian Museum Macquarie Island Expedition
Australian Museum Macquarie Island Expedition, 1977-78 [1978, eng] A-20793

Belgica
Biography of Gerlache de Gomery, polar explorer [1976, fre] A-19363

British Antarctic Expedition
Scott of the Antarctic [1977, eng] A-20012

French South Polar Expedition
Voyage of the *Pourquoi-pas,* 1908-1910 [1978, eng] **D-20850**

German Antarctic Expedition
First segment of the Antarctic Expedition completed [1976, ger] **A-20962**
First information about the second segment of the antarctic voyage [1976, ger] **A-20963**
First German krill expedition to the Antarctic completed [1976, ger] **A-20964**
Antarctic Expedition 1975-1976 of the Federal Republic of Germany [1978, ger] **B-21443**
Course of the Antarctic Expedition of the Federal Republic of Germany [1978, ger] **D-21444**

International Weddell Sea Oceanographic Expedition
International Weddell Sea Oceanographic Expedition, 1977 [1977, eng] **J-19619**

Japanese Antarctic Expedition, 1910-1912
Newspaper articles on the JARE with the *Kainan Maru* during her calls at Wellington and Sydney in 1910-1912 [1977, jap] **A-19306**

Japanese Antarctic Research Expedition
An expedition newspaper, *Antarctic News* [1978, jap] **A-20437**
Members of the 1st JARE—samurai [1978, jap] **D-19767**
First wintering party of the JARE [1978, jap] **D-19768**
Programs and profiles of the 19th JARE, 1977-1978 [1978, jap] **D-19774**
Activity of the summer party of the 18th JARE in 1976-1977 [1978, jap] **D-20088**

Marion Dufresne Cruise
Recent French oceanographic voyages [1976, fre] **D-20349**

New Zealand Geological and Survey Expedition
New Zealand topographic survey in Ross Dependency [1963, eng] **C-19279**

Norwegian Antarctic Expedition
Preliminary report of the 1976/77 Norwegian Antarctic Research Expedition [1977, eng] **A-19778**

Ob' Cruise
Seventh voyage of the R/V *Ob'* [1968, eng] **J-20327**
Activities of the *Ob',* 1961-62 [1968, eng] **J-20328**

Oceanic Research Foundation
Private research expedition to Antarctica, 1977-78 [1979, eng] **D-21718**

Operación 90
The army goes to the South Pole [1975, spa] **D-20259**

Ross Expedition
Physicians as explorers. Joseph Hooker: botanical journeys in Antarctica and India [1977, eng] **A-20196**

Soviet Antarctic Expedition
Main results of the 19th Soviet Wintering Expedition [1977, rus] **D-19882**

Transglobe Expedition
Transglobe Expedition 1976-1980 [1975, eng] **D-20303**

U.S. Exploring Expedition
Wilkes Expedition [1971, eng] **D-20019**

Victoria University of Wellington Antarctic Expedition
Immediate report of the Victoria University of Wellington Antarctic Expedition, 1971-1972 [1972, eng] **D-20919**

Exploitation
See under: Arthropoda-Crustacea; Icebergs; Mammalia; Mammalia-Cetacea; Ocean; Pisces

Exploration methods
Mining in Antarctica [1976, eng] **A-19737**
Environmental impact in Antarctica [1978, eng] **B-19978**
Ross Ice Shelf Project environmental impact statement July, 1974 [1978, eng] **B-19979**
Environmental appraisal for the Dry Valley Drilling Project phases III, IV, V (1973-74, 1974-75, 1975-76) [1978, eng] **B-19980**
Antarctic resources—effects of mineral exploration [1977, eng] **E-19350**
Potential environmental impact of diamond drilling [1976, eng] **E-19463**
Summary of field activities of the Dry Valley Drilling Project 1972-1973 and 1973-1974 [1978, eng] **E-19981**
Energy search turns to Antarctic [1978, eng] **E-21235**
Aeromagnetic survey over southern Graham Land: a preliminary report [1976, eng] **L-19549**

Explorers and scientists
New Zealand surveyors in Antarctica [1963, eng] **A-19280**
Profiles of members of the 16th JARE [1976, jap] **A-19432**
List of Royal Geographic Society archives on Antarctica [1976, eng] **A-20006**
Antarctic explorers: new definitives for British Antarctic Territory [1973, eng] **A-20059**
Emergence of Antarctica [1978, eng] **A-20199**
See also: Exchange scientists; Observers; Personnel

Amundsen, R.E.G.
Amundsen's route to the South Pole [1979, eng] **A-21717**

Atkinson, E.L.
Two naval medical explorers [1977, eng] **A-20190**

Bellingshausen, T.T.
Discoverer of Antarctica (in observance of T.T. Bellingshausen's 200th birthday) [1978, rus] **A-21651**

Byrd, R.E.
The other Richard E. Byrd: naval officer [1978, eng] **A-20920**
Richard E. Byrd: admiral of the ends of the earth [1977, spa] **A-21292**

Cook, J.
Journals of Captain James Cook. 4. Life of Captain James Cook [1974, eng] **A-21270**

Gerlache de Gomery, A.V.J. de
Biography of Gerlache de Gomery, polar explorer [1976, fre] **A-19363**

Hooker, J.E.
Physicians as explorers. Joseph Hooker: botanical journeys in Antarctica and India [1977, eng] **A-20196**

Levick, G.M.
Two naval medical explorers [1977, eng] **A-20190**

Loewe, F.
From Greenland to Antarctica; in memory of Fritz Loewe [1975, ger] **A-19799**

Mawson, D.A.
This accursed land [1977, eng] **A-20011**
Vitamin A and Sir Douglas Mawson [1978, eng] **H-20514**

Murray, J.
James Murray, F.R.S.E., 1865-1914—a belated biography [1976, eng] **A-20916**

Piedrabuena, L.
Piedrabuena spends a month in Antarctica [1975, spa] **A-20255**

Ross, J.
Polar Rosses: John and James Clark Ross and their explorations [1973, eng] **A-19493**

Ross, J.C.
Polar Rosses: John and James Clark Ross and their explorations [1973, eng] **A-19493**

Scott, R.F.
Scott of the Antarctic [1977, eng] **A-20012**
Scott's men [1977, eng] **A-20864**

Somov, M.M.
Biographies of Soviet scientists [1978, rus] **A-20608**
Memoirs of Mikhail Somov, Soviet scientist [1978, rus] **A-20609**
Eminent polar explorer (in observance of the 70th anniversary of M.M. Somov's birth) [1978, rus] **A-21713**

Sparrman, A.
Biography of Anders Sparrman, a member of Captain Cook's expedition, 1772-1775 [1977, eng] **A-19351**

Victor, P.E.
French National Committee for Antarctic Research information bulletin No.60-61 [1976, fre] **A-20352**

Vize, V.IU.
Biographies of Soviet scientists [1978, rus] **A-20608**

Weddell, J.
Fortunate route of James Weddell [1975, spa] **D-20261**

Wilkes, C.
Wilkes Expedition [1971, eng] **D-20019**

Wilson, E.
Physicians as explorers. Edward Wilson: Scott's final antarctic companion [1977, eng] **A-21030**

Zubov, N.N.
Biographies of Soviet scientists [1978, rus] **A-20608**

Explosives
Controlled perimeter blasting in cold regions [1975, eng] **G-19487**

Extraterrestrial material
Activities of Japanese party in McMurdo Sound area 1976-77 [1977, eng] **A-19529**
Life inside Martian rocks [1978, eng] **B-20799**
Antarctica: a deep-freeze storehouse for meteorites [1977, eng] **E-19325**
Japanese scientific activities in the McMurdo region, 1976-1977 [1977, eng] **E-19653**
Antarctic search for meteorites [1977, eng] **E-19654**
Proceedings of the second Symposium on Yamato Meteorites [1978, eng] **E-19916**
Yamato-74 meteorites [1978, eng] **E-19917**
Collection of Yamato meteorites, 1975-76 [1978, eng] **E-19918**
First meteorites found in Victoria Land, Dec. 1976 and Jan. 1977 [1978, eng] **E-19919**
Possible mechanism of concentration of meteorites in Antarctica [1978, eng] **E-19920**
Study on the extraterrestrial materials in Antarctica (VIII) [1978, eng] **E-19922**
Classification for the Yamato-74 chondrites [1978, eng] **E-19923**
Mineralogical and petrographical studies of the Yamato meteorites, Yamato-7301(j), -7305(k), -7308(l) and -7303(m) from Antarctica [1978, eng] **E-19924**
Petrological studies of Yamato-74 meteorites (1) [1978, eng] **E-19925**
Petrological studies of Yamato-74 meteorites (2) [1978, eng] **E-19926**
Preliminary mineralogical examination of the Yamato-74 achondrites [1978, eng] **E-19927**
Yamato achondrite polymict breccias [1978, eng] **E-19928**
Rare gas studies of Yamato-7301(j), -7304(m) and -7305(k) [1978, eng] **E-19929**
Cosmic ray induced Mn-53 in Yamato-7301(j), -7305(k) and -7304(m) meteorites [1978, eng] **E-19930**
Oxygen isotopes in several Yamato meteorites [1978, eng] **E-19931**
K-Ar age of Yamato meteorite, Yamato-74190-01(L) [1978, eng] **E-19932**
REE, Ba, Sr and Rb in the Yamato meteorites [1978, eng] **E-19933**
Supplementary notes on the magnetic classification of stony meteorites [1978, eng] **E-19934**
Magnetic properties of an iron meteorite and a pallasite [1978, eng] **E-19935**
Metallographic properties of Yamato iron meteorite and stony-iron meteorite [1978, eng] **E-19936**
Note on new antarctic iron meteorites [1978, eng] **E-19937**
Yamat-74662 meteorite: a carbonaceous chondrite Type II [1978, eng] **E-19938**
Yamato meteorites sampling [1975, jap] **E-20048**
Inverted pigeonites from lunar breccia 76255 [1977, eng] **E-20066**
Antarctic meteorite newsletter, Vol.1, No.1 [1978, eng] **E-20188**
Characterization of crust formation on a parent body of achondrites and the moon by pyroxene crystallography and chemistry [1976, eng] **E-20228**
Antarctic meteorite newsletter, Vol.1, No.2 [1978, eng] **E-20407**
Antarctic meteorite Yamato 74123—a new ureilite [1978, eng] **E-20410**
Search for meteorites [1978, jap] **E-20439**
Under Antarctica's ice sheet—a meteorite crater [1978, rus] **E-20447**
Morphology of chasma walls, Mars [1978, eng] **E-20690**
Antarctic meteorite [1978, eng] **E-20697**
Nature of the soil of Mars: evidence from Antarctica [1978, eng] **E-20871**
Antarctic meteorite newsletter, Vol.1, No.3 [1978, eng] **E-20960**
Curator finds rare meteorites in antarctic group [1978, eng] **E-21017**
On the survival of organic compounds in the polar regions of Mars [1978, eng] **E-21093**
Terrestrial ages of four Allan Hills meteorites [1979, eng] **E-21104**
Eleven new meteorites from Antarctica, 1976-1977 [1978, eng] **E-21124**
Petrology of the Yamato meteorites (j), (k), (l), and (m) from Antarctica [1978, eng] **E-21125**
Cosmic-ray-produced Mn-53 in thirty-one meteorites [1978, eng] **E-21129**
Japanese scientific activities in Victoria Land 1977-1978 [1978, eng] **E-21507**
Antarctic search for meteorites during the 1977-78 field season [1978, eng] **E-21525**
Ross Sea glaciations: events in Lower Victoria Valley [1978, eng] **E-21527**
Processing and distributing antarctic meteorites collected during 1977-78 [1978, eng] **E-21638**
Topographic features of the ice sheet around the Yamato Mountains [1978, eng] **F-19921**
On the origin of mineral impurities in ice [1977, fre] **F-20112**

Fallout
See: Radioactive fallout

Fauna
See: Biogeography/Zoogeography; Ecology/Faunal; Zoology

Firn
Subsurface measurements of the Ross Ice Shelf, McMurdo Sound, Antarctica [1977, eng] **F-19689**
Factors controlling oxygen isotopic composition of fallen snow in Antarctica [1978, eng] **F-19880**
Stable isotope variations in snow and ice at Vostok, Antarctica [1977, eng] **F-20121**
Summary of work by the Physics Institute, Bern, on alpine and polar ice [1977, eng] **F-20131**
Chemistry of 700 years of precipitation at Dye 3, Greenland [1975, eng] **F-20599**
Ice-coring project at Mizuho Station, East Antarctica, 1970-1975 [1978, eng] **F-21297**
Compiled density data from cores drilled at Mizuho Station [1978, eng] **F-21308**

ACCUMULATION
Less surface accumulation on the Ross Ice Shelf than hitherto assumed [1977, eng] **F-20119**

AGE DETERMINATION
Microparticle analysis of the 101-meter South Pole ice core [1977, eng] **F-19681**

ALBEDO
Space measurements of microwave brightness of polar firn [1978, eng] **F-21496**

CHEMISTRY
On the origin of mineral impurities in ice [1977, fre] **F-20112**
Distribution of artificial tritium in firn samples from East Antarctica [1977, eng] **F-20116**
Accumulation of snow and radioactive debris in Antarctica [1977, eng] **F-20117**
Trace element content in East Antarctica snow samples [1977, eng] **F-20118**

Firn

CHEMISTRY *(cont.)*
Stable isotope homogenization of polar firn and ice [1977, eng] **F-20122**
On the origins of mineral impurities in ice (Transl.) [1979, eng] **F-21262**
Fixed nitrogen in antarctic ice and snow [1978, eng] **F-21530**

CORES
Microparticle analysis of the 101-meter South Pole ice core [1977, eng] **F-19681**
Petrographic data from cores drilled at Mizuho Station [1978, eng] **F-21309**
Fixed nitrogen in antarctic ice and snow [1978, eng] **F-21530**

DENSITY
Methods and results of studying radiation properties of snow-firn covers [1977, rus] **I-20426**

ELECTRICAL PROPERTIES
Electrical behaviors of antarctic ice drilled at Mizuho Station, East Antarctica [1978, eng] **F-21302**

MECHANICAL PROPERTIES
Permeability and elasticity of snow and firn at Mizuho Station [1978, eng] **F-21301**
Glaciological investigations along the Mirny-Pionerskaya-Dome C profile [1978, rus] **F-21389**

RADIATION
Space measurements of microwave brightness of polar firn [1978, eng] **F-21496**

STRATIGRAPHY
Stratigraphic analyses of firn and ice at Mizuho Station [1978, eng] **F-21299**

STRUCTURE
Firn and ice core structure at Mizuho Station [1978, eng] **F-21300**
Petrographic data from cores drilled at Mizuho Station [1978, eng] **F-21309**
Microwave emission from polar firn [1978, eng] **F-21376**
Methods and results of studying radiation properties of snow-firn covers [1977, rus] **I-20426**

TEMPERATURE
Space measurements of microwave brightness of polar firn [1978, eng] **F-21496**

First aid
Antarctic first aid manual [1978, eng] **H-20780**

Fisheries
Antarctica. An information paper presented by Senator the Honourable J.J. Webster, Minister for Science [1977, eng] **A-19269**
Antarctic enlightenment [1977, eng] **A-19440**
Research and exploration of the resources of krill and food fish in the Antarctic [1977, eng] **A-19515**
AKP unit for producing protein paste from krill [1972, rus] **A-19847**
Krill rush: tiny fish puts Antarctica up for grabs [1978, eng] **A-19866**
Krill—an immense but vulnerable source of protein [1971, eng] **A-20058**
Exploitation of krill [1973, eng] **A-20072**
Prospects for the utilization of krill [1973, eng] **A-20073**
To Antarctica on the *Tazar* [1977, pol] **A-20166**
Discussion on scientific research in Antarctica [1977, eng] **A-20272**
Resource exploitation [1974, eng] **A-20575**
Preparing vitamin A from antarctic icefish liver [1972, rus] **A-20808**
Processing *Notothenia marmorata* roe [1971, rus] **A-20810**
Efficient method of filleting toothfish and other large fish [1970, rus] **A-20811**
Technological and chemical characteristics and utilization of *Notothenia rossi marmorata* [1968, rus] **A-20812**
Using krill meal as feed [1966, rus] **A-20869**
Space conference in Konstanz—Scientific results on fisheries [1973, ger] **A-20938**
Methods of Soviet krill fisheries [1974, ger] **A-20939**
News about krill [1974, ger] **A-20940**
News about krill Pt.2 [1975, ger] **A-20941**
First krill expedition of the Federal Republic of Germany to antarctic waters [1975, ger] **A-20942**
First segment of the Antarctic Expedition completed [1976, ger] **A-20962**
First information about the second segment of the antarctic voyage [1976, ger] **A-20963**
First German krill expedition to the Antarctic completed [1976, ger] **A-20964**
Fish resources in the South Atlantic Ocean [1976, ger] **A-20966**
Krill catch in the Atlantic sector of the Antarctic [1977, ger] **A-20968**
International interest in krill takes on keener edge with new developments [1978, eng] **A-21160**
Krill meal and other protein sources as substitutes of fishmeal in rainbow trout diets: sensory investigations of influences on eating quality and shelf life [1978, ger] **A-21220**
Evaluation of krill meal as protein feed [1978, ger] **A-21253**
Southern Ocean catch statistics, 1971-1977 [1978, eng] **A-21383**
Fishing gear techniques to catch krill and fish in the Scotia Sea [1978, ger] **A-21449**
On the biological value of krill paste [1971, rus] **B-19410**
Living resources of Southern Ocean [1977, eng] **B-19456**
Antarctic krill resource: prospects for commercial exploitation [1978, eng] **B-19864**
Evaluation of possible United States involvement in an antarctic krill fishery [1976, eng] **B-19895**
Potential impact of harvesting zooplankton on the south circumpolar ecosystem [1978, eng] **B-19985**
Krill meal as poultry feed [1976, rus] **B-19994**
Living resources of the Southern Ocean [1977, eng] **B-20001**
Harvesting of krill [1977, eng] **B-20002**
Utilization of krill [1977, eng] **B-20003**
Production of lobsters in the waters of Saint Paul and Amsterdam Islands [1977, eng] **B-20044**
Whale controversy: United States vs. Japan [1974, eng] **B-20132**
Conservation of antarctic living marine resources [1978, eng] **B-20221**
Role of krill in the antarctic marine ecosystem [1977, eng] **B-20222**
Conservation of southern ocean marine resources [1978, eng] **B-20223**
Conservation in the Antarctic [1977, eng] **B-20275**
Place of the Antarctic in biological sciences [1977, eng] **B-20276**
Antarctic krill—food for the future [1975, ger] **B-20290**
Penguins, whalers, and sealers: a voyage of discovery [1977, eng] **B-20497**
Biological resources of the world ocean and the prospects for their use [1978, eng] **B-20511**
Some ways of increasing the world ocean bioproductivity [1977, eng] **B-20512**
Krill as human food [1973, rus] **B-20612**
Report and papers of the Scientific Committee of the Commission on Whaling [1975, eng] **B-20655**
Amino acid content of krill and krill meal [1970, rus] **B-20819**
Using dehydrated "Okean" protein paste in foods [1976, rus] **B-20821**
Notes on some fishes associated with the antarctic krill. 1. *Neopagetopsis ionah* Nybelin [1978, eng] **B-20825**
Zooplankton fisheries of the world: a review [1978, eng] **B-20831**
Population biology and the management of whales [1976, eng] **B-20834**
Convenient assay method for protease of the antarctic krill using paper disks [1978, jap] **B-20943**
Harvesting: ecological and energy considerations [1978, eng] **B-21081**
BIOMASS [1978, eng] **B-21082**
Research and exploration of the resources of krill and food fish in the Antarctic. Report on the 1975/76 Antarctic Expedition of the Federal Republic of Germany [1977, ger] **B-21118**
Antarctic fisheries [1978, eng] **B-21151**
Shrimps offer a whale of a catch [1978, eng] **B-21219**
Antarctic Expedition 1975-1976 of the Federal Republic of Germany [1978, ger] **B-21443**
Fishery biological investigations [1978, ger] **B-21447**
Echosounding for the vertical distribution of antarctic krill [1978, ger] **B-21448**
Processing and product development [1978, ger] **B-21451**

Antarctic marine living resources with special reference to krill *Euphausia superba:* assessment of adequacy of present knowledge [1978, eng] **B-21492**
Course of the Antarctic Expedition of the Federal Republic of Germany [1978, ger] **D-21444**
Importance of ocean upwelling [1974, eng] **J-19395**
Problems of exploitation and conservation of the ocean [1977, rus] **J-20517**
Modelling the exclusive economic zone enforcement problem [1978, eng] **J-21285**
Report on Ninth Consultative Meeting of the Antarctic Treaty [1977, eng] **M-19324**
[Press briefing] [1977, eng] **M-19582**
International cooperation under the Antarctic Treaty [1978, eng] **M-20789**
Trends and prospects for regimes for living and mineral resources in the Antarctic [1979, eng] **M-21369**

Fishes

See: Pisces

Flora

See: Biogeography/Phytogeography; Ecology/Floral

Flow

See under: Glacier ice; Ice; Ice sheet; Shelf ice

Fog

Dry ice = Antarctica [1978, eng] **I-21077**

Food supply

Research and exploration of the resources of krill and food fish in the Antarctic [1977, eng] **A-19515**
Fishing gear techniques to catch krill and fish in the Scotia Sea [1978, ger] **A-21449**
Experiments in making sausages from krill [1978, eng] **B-20526**
Fermented alkane and krill meal as a fish meal substitute in trout fodder [1977, ger] **B-20969**
Effect of krill stomach content on quality of krill paste [1977, ger] **B-20977**
Antarctic Expedition 1975-1976 of the Federal Republic of Germany [1978, ger] **B-21443**
Processing and product development [1978, ger] **B-21451**
Antarctic expedition of 1977-1978 in preparation [1977, ger] **D-20974**
Living conditions during the antarctic winter [1973, jap] **G-19442**
Nutrition and food supply in Antarctica [1963, jap] **G-19445**
Food supply problems of an early JARE [1978, jap] **G-20432**
Human life support in Antarctica [1978, rus] **G-20677**
Processing of krill [1976, ger] **G-20967**
Mechanical processing of antarctic fish [1977, ger] **G-20970**
Quality of preservation of antarctic fish and krill products [1977, ger] **G-20972**
Analysis of moisture retention in krill paste [1977, ger] **G-20973**
Measuring moisture in krill meal [1977, ger] **G-20976**
Food and logistics material for the polar traverse [1975, eng] **G-20990**
Assimilation by the organism of aminoacids of the protein product paste "Ocean" [1974, rus] **H-20866**
See also: Nutrition

Forecasting

See under: Ice; Sea ice. *See also:* Weather forecasting

Fossils

See: Paleontology

Frozen ground

See: Pedology/Cryopedology; Permafrost

Fuel

West Antarctic ice sheet and CO2 greenhouse effect: a threat of disaster [1978, eng] **F-19878**

Fulmars

See: Aves-Procellariiformes

Fungi

See: Thallophyta-Fungi

Genetics

Genetic variation in wild house mice [1978, eng] **B-19940**

Geochemistry

Nutrient fluxes in Lake Bonney—a meromictic antarctic lake [1977, eng] **B-20892**
Clay minerals in southeast Indian Ocean sediments [1977, eng] **E-19262**
Southeast Indian Ocean: upper Pleistocene calcareous nannofossil zones and paleoclimatic history [1975, eng] **E-19281**
Geochemistry of antarctic sediments [1975, eng] **E-19283**
Geochemical features of antarctic lakes [1977, jap] **E-19292**
Trace metals in Langhovde [1977, jap] **E-19294**
Geology and petrography of the northern Yamato Mountains, East Antarctica [1977, eng] **E-19311**
Micromanganese nodules in deep-sea sediments [1976, eng] **E-19315**
ARA *Islas Orcadas* cruise 0775 sediment descriptions [1977, eng] **E-19354**
Distribution of ferromanganese deposits in the World Ocean [1972, eng] **E-19375**
Regional geochemistry of ferromanganese nodules in the world ocean [1972, eng] **E-19376**
Pleistocene manganese pavement production in the Tasman Sea [1972, eng] **E-19377**
Petrogenetic significance of volcanic rocks [1974, eng] **E-19415**
Marine manganese deposits [1977, eng] **E-19509**
Strontium isotopic study of sediment from the Ross Sea [1977, eng] **E-19640**
Sedimentary geochemical processes near the Pacific-Antarctic Ridge [1977, eng] **E-19641**
Geological studies of the Dufek intrusion, Pensacola Mountains, 1976-1977 [1977, eng] **E-19650**
Japanese scientific activities in the McMurdo region, 1976-1977 [1977, eng] **E-19653**
Geology of some volcanic rocks from the Ross Island, Mount Morning and southern Victoria Land areas [1977, eng] **E-19658**
Soil development in the Taylor Valley and McMurdo Sound area [1977, eng] **E-19660**
Petrogenesis of Ferrar Group rocks [1977, eng] **E-19661**
Resource and radioactivity survey in southern Victoria Land [1977, eng] **E-19663**
Analysis of permafrost cores from antarctic dry valleys [1977, eng] **E-19664**
Logging summary of the Dry Valley Drilling Project [1977, eng] **E-19665**
Petrology of the Dana Mountains, Antarctic Peninsula [1978, eng] **E-19779**
Geochemistry of sediments in the western central Atlantic, DSDP Leg 39 [1977, eng] **E-19849**
Petrology and age of Walvis Seamount and Gough Island volcanic tuffs [1977, eng] **E-19850**
Petrography and petrology of a basanitoid flow from Hut Point Peninsula, Antarctica [1974, eng] **E-19997**
Late Neogene diatom biostratigraphy and paleoecology of the dry valleys and McMurdo Sound, Antarctica [1977, eng] **E-19998**
Age and position of the Ellsworth Mountains crustal fragment, Antarctica [1977, eng] **E-20090**
Anatectic origin of late orogenic granitic intrusions of the Hope and Ida groups in the Beardmore Glacier area, Antarctica [1972, rus] **E-20134**
Symposium on Andean and Antarctic volcanology problems [1976, eng] **E-20144**
Upper Cenozoic volcanism in the Andes of southern Chile [1976, eng] **E-20145**
Geology and geochemistry of Bouvet Island [1976, eng] **E-20146**
Volcanic history in Marie Byrd Land [1976, eng] **E-20149**
Study of strontium isotopes in lakes and surficial deposits of the ice-free valleys, Southern Victoria Land, Antarctica [1978, eng] **E-20164**
Cenozoic clay mineralogy [1977, eng] **E-20177**
Tephra in glacier ice [1977, eng] **E-20180**
Geology of the Antarctic Peninsula [1978, eng] **E-20236**
Cenozoic volcanism in the Antarctic [1977, eng] **E-20277**
Antarctic geological map series. Sheet 17—Northern Yamato Mountains (1) Mt. Fukushima [1978, eng] **E-20302**
Authigenic gypsum in marine sediments [1978, eng] **E-20359**
Deep-sea manganese nodules in the stratigraphic record: evidence from DSDP cores [1978, eng] **E-20360**

Geochemistry *(cont.)*

Minerals in Cenozoic rocks of Ross Island [1978, eng] **E-20363**
Trace elements in volcanic rocks of Ross Island and vicinity [1978, eng] **E-20365**
Ra, U, and Th concentrations in Wright Valley cores [1978, eng] **E-20366**
Geochemistry of Ferrar dolerite from Don Juan Pond [1978, eng] **E-20367**
Water chemistry and sediments near McMurdo Sound [1978, eng] **E-20370**
Significance of gamma-ray, salinity and electrical logs in DVDP boreholes [1978, eng] **E-20371**
Genesis of volcanic rocks of Ross Island [1978, eng] **E-20373**
Correlation of clinopyroxene composition with environment of formation [1978, eng] **E-20375**
Soil chemistry of Marion Island (Subantarctic) [1978, eng] **E-20412**
Metamorphic geology of the Windmill Islands [1977, eng] **E-20540**
K-Ar ages of Bounty Islands granites and metasediments [1978, eng] **E-20541**
Campbell Island geology [1978, eng] **E-20542**
Volcanogenic sediment in the Ross Sea [1977, eng] **E-20753**
Dating of geochemical events in Lake Bonney, Antarctica, and their relation to glacial and climate changes [1977, eng] **E-20757**
Separation of primary ice-rafted debris from lag deposits in the Southern Ocean [1978, eng] **E-20798**
Plate tectonics: hot spot implicated in ridge formation [1978, eng] **E-20851**
Geology and geochemistry of Mt. Dromedary Massif [1978, eng] **E-20873**
Major element geochemistry of Ross Sea sediments [1978, eng] **E-20879**
Two patterns of modern global lithogenesis and their methodology [1978, eng] **E-20902**
Phosphatic nodule beds in Victoria and the late Miocene-Pliocene eustatic event [1978, eng] **E-20961**
Age of Mount Andrus and Sr 87/Sr 86 ratio of volcanic rocks in Marie Byrd Land and the South Shetlands [1973, spa] **E-21087**
Polar groundwater—a thermo-saline system [1978, eng] **E-21092**
On the survival of organic compounds in the polar regions of Mars [1978, eng] **E-21093**
Nd and Sr isotope data on cal-alkaline andesites and plateau lavas from South America [1979, eng] **E-21224**
Metamorphic petrology of the Sarmiento ophiolite complex, Chile [1978, eng] **E-21287**
Geochemistry of Mesozoic marginal basin floor igneous rocks from southern Chile [1979, eng] **E-21319**
Fossil marginal basin in the southern Andes [1974, eng] **E-21327**
Nature of the oceanic crust [1976, eng] **E-21330**
Marginal basin "rocas verdes" complex from southern Chile [1976, eng] **E-21332**
Mesozoic volcano-tectonic rift zone in southernmost South America [1978, eng] **E-21333**
Pillow talk [1978, eng] **E-21334**
Trace element chemistry of the Kirkpatrick basalt, Storm Peak, Central Transantarctic Mountains [1974, eng] **E-21483**
Regional distribution of Sr-87/Sr-86 ratios and mixing of sediments in the Ross Sea, Antarctica [1974, eng] **E-21484**
Petrologic study of the granulite-facies metamorphic rocks of Enderby Land [1978, eng] **E-21497**
Geological investigations in the Leverett Glacier area [1978, eng] **E-21498**
Plutonic rocks from the Ruppert Coast, West Antarctica [1978, eng] **E-21500**
Geologic studies in Orville Coast and eastern Ellsworth Land, Antarctic Peninsula [1978, eng] **E-21501**
Geological studies in the McMurdo region [1978, eng] **E-21506**
Ages for vida granite and olympus granite gneiss, Victoria Valley [1978, eng] **E-21508**
Rubidium-strontium geochronology of granitic rocks from Mr. Chapman [1978, eng] **E-21509**
Geology of DVDP 1 and the hyaloclastite of DVDP 3, Hut Point Peninsula, Antarctica [1978, eng] **E-21520**
Volcanoes in the Hobbs Coast and Ruppert Coast sectors of Marie Byrd Land [1978, eng] **E-21521**
Volcanic geology of the lower slopes of Mt. Morning [1978, eng] **E-21523**
Amino acid racemization in *Islas Orcadas* piston core 12-77-24 [1978, eng] **E-21561**
Manganese nodules in the South Georgia Basin and Falkland Plateau [1978, eng] **E-21566**
Geochemistry of bottom sediments from the southern Argentine shelf [1978, eng] **E-21577**
Comparison of geological structure of southeast Indostan and Sri Lanka with Enderby Land, Mac. Robertson Land and Princess Elizabeth Land in East Antarctica [1978, rus] **E-21699**
Geochemical and isotope studies, Ross Ice Shelf Project [1977, eng] **F-19688**
Chemical constituents in the surface snow in Mizuho Plateau [1978, eng] **F-19839**
On the origin of mineral impurities in ice [1977, fre] **F-20112**
On the origins of mineral impurities in ice (Transl.) [1979, eng] **F-21262**
Carbonate compensation depth in the Southern Ocean south of Australia [1975, eng] **J-19274**
Distribution of dissolved copper in the Pacific [1977, eng] **J-19323**
Uranium in open ocean: concentration and isotopic composition [1977, eng] **J-19516**
Silica in the near-bottom Atlantic [1975, eng] **J-20506**
Reduction in the South Pacific zone of high bottom current activity [1978, eng] **J-21568**
Rb-Sr mantle isochrons and variations in the chemistry of Gondwanaland's lithosphere [1978, eng] **L-19879**
Paleomagnetism of the Alcaparrosa Formation, Argentina [1978, eng] **L-21230**

Geochronology

Permian and Triassic Beacon rocks near Beardmore Glacier [1968, eng] **E-19250**
Geology of Marie Byrd Land and Eights Coast [1976, rus] **E-19277**
Southeast Indian Ocean: upper Pleistocene calcareous nannofossil zones and paleoclimatic history [1975, eng] **E-19281**
Drift of the major continental blocks since the Devonian [1977, eng] **E-19329**
Radiocarbon dating of the last glaciation in Peru [1977, eng] **E-19374**
Paleoclimatic history in deep-sea cores [1972, eng] **E-19423**
Geological research in the Ellsworth Mountains: Norwegian Expedition 1974-75 [1976, jap] **E-19425**
Potassium-argon ages of schists from Chatham Island [1977, eng] **E-19467**
Geochronology of the basement rocks of the Transantarctic Mts. [1970, eng] **E-19470**
Geology of Antarctica: a review [1977, eng] **E-19476**
Geochronology in relation to the stratigraphy of the Antarctic Peninsula [1976, eng] **E-19548**
Sedimentary rocks from Charcot Island [1976, eng] **E-19565**
Volcanoes and volcanic rock in Antarctica [1977, jap] **E-19586**
With the Soviets in Antarctica, austral summer 1976-1977 [1977, eng] **E-19648**
Early Azoic age of the earth's oldest rocks (based on results of lead-isotope studies of crystalline mountain rocks from the Antarctic platform) [1976, rus] **E-19791**
Volcanic rocks of the Chatham Islands [1977, eng] **E-19805**
Petrology and age of Walvis Seamount and Gough Island volcanic tuffs [1977, eng] **E-19850**
History of sediment lithofacies in the South Atlantic Ocean [1977, eng] **E-19852**
Stratigraphic relations between Argentina and Antarctica [1975, spa] **E-19860**
Fission track geochronology of King Island, Australia [1978, eng] **E-19870**
Evolution of the earth's cryosphere [1976, rus] **E-19972**
Termination of last interglacial episode and the Wilson Antarctic surge hypothesis [1978, eng] **E-20008**
Age and position of the Ellsworth Mountains crustal fragment, Antarctica [1977, eng] **E-20090**
Anatectic origin of late orogenic granitic intrusions of the Hope and Ida groups in the Beardmore Glacier area, Antarctica [1972, rus] **E-20134**
Volcanic history in Marie Byrd Land [1976, eng] **E-20149**
Tephra in glacier ice [1977, eng] **E-20180**
Precambrian basement at Molodezhnaya Station, East Antarctica [1978, eng] **E-20181**
Interpretation of levelings and radiocarbon dating of Showa beaches [1977, eng] **E-20226**
Geology of the Antarctic Peninsula [1978, eng] **E-20236**

Chronology of glacial sediments in the Taylor Valley [1978, eng] **E-20361**
K/Ar age determinations on DVDP 1 and 2 core samples [1978, eng] **E-20369**
Early Cenozoic global plate reorganization [1978, eng] **E-20409**
Use of strontium isotopes to study mixing of sediment derived from different sources: the Ross Sea, Antarctica [1978, eng] **E-20513**
K-Ar ages of Bounty Islands granites and metasediments [1978, eng] **E-20541**
Paleoclimatic trends in Early and Middle Pliocene deep-sea sediments of the Antarctic [1978, eng] **E-20552**
Geology of West Antarctica, and mineral deposits in Antarctica [1975, ger] **E-20619**
Tectonic zonation and geological evolution of Antarctica [1978, rus] **E-20674**
Palynostratigraphy of the Victoria group of South Victoria Land, Antarctica [1977, eng] **E-20756**
Age of Mount Andrus and Sr 87/Sr 86 ratio of volcanic rocks in Marie Byrd Land and the South Shetlands [1973, spa] **E-21087**
Terrestrial ages of four Allan Hills meteorites [1979, eng] **E-21104**
Late Neogene chronostratigraphy, biostratigraphy, biochronology and paleoclimatology [1973, eng] **E-21195**
Quaternary stratigraphy and glacial history of the Lower Taylor Valley, Antarctica [1978, eng] **E-21354**
Ages for vida granite and olympus granite gneiss, Victoria Valley [1978, eng] **E-21508**
Rubidium-strontium geochronology of granitic rocks from Mr. Chapman [1978, eng] **E-21509**
Glacial geologic studies in the McMurdo Sound region [1978, eng] **E-21528**
Piston coring aboard USCGC *Glacier* in the Ross Sea [1978, eng] **E-21576**
Antarctic metamorphic facies [1978, rus] **E-21700**
Glacier history of the McMurdo Sound region [1977, eng] **F-19676**
Changes in the composition of atmospheric precipitation [1977, eng] **F-20045**
Observations on submerged glacial ice in McMurdo Sound, Antarctica [1978, eng] **F-20392**
Glacial development and temperature trends in the Antarctic and in South America [1978, eng] **I-21385**
Late Quaternary paleoceanographic events in the southeast Indian Ocean [1976, eng] **J-19914**
Paleomagnetism of the Alcaparrosa Formation, Argentina [1978, eng] **L-21230**
See also: Historical geology

Geodetic survey
Geodetic observation methods for surveying and monitoring Antarctic outflow glaciers [1975, ger] **C-19500**
Survey of a traverse on the Antarctic inland ice [1975, ger] **C-19501**
Measurements of a barometric altitude profile in Enderby Land, Antarctica [1975, ger] **C-19502**
Photogrammetric studies of a group from the G.D.R. during the 17th Soviet Antarctic Expedition [1975, ger] **C-19503**
Accuracy of trigonometric leveling above ice at stable stratification of temperature and refraction [1975, ger] **C-19504**
Studies of barometric leveling in Antarctica [1975, ger] **C-19505**
"Mountains of German-Soviet friendship" in Enderby Land (Antarctica) [1977, ger] **C-21083**
Some problems of photogrammetry in Antarctica [1976, eng] **C-21393**
Geodetic and meteorological investigations of ground refraction over antarctic continental ice [1978, rus] **C-21463**
Flow rate and ice discharge of the Hays, Campbell and Assender Glaciers, Enderby Land, Antarctica [1977, ger] **F-21156**

Geographic distribution
See under: Arthropoda; Arthropoda-Arachnida; Arthropoda-Crustacea; Arthropoda-Insecta; Aves; Aves-Charadriiformes; Aves-Procellariiformes; Aves-Sphenisciformes; Bryophyta-Musci; Bryozoa; Coelenterata; Echinodermata; Mammalia-Cetacea; Mammalia-Pinnipedia; Mollusca; Pisces; Protozoa; Spermatophyta; Thallophyta; Thallophyta-Algae; Thallophyta-Lichens; Vermes

Geographic names
New Zealand surveyors in Antarctica [1963, eng] **A-19280**
Gazetteer of the British Antarctic Territory [1977, eng] **A-20159**
Antarctic toponymy [1975, spa] **A-20263**
Russian names in Antarctic toponymy [1978, rus] **A-21705**
Amundsen's route to the South Pole [1979, eng] **A-21717**
Antarctic field manual [1978, eng] **G-20779**

Geography
See: Biogeography; Political geography

Geological specimens
See: Specimen collections/Geological

Geology
Report on third symposium on Antarctic Geology and Geophysics [1977, eng] **A-19307**
Discussion on scientific research in Antarctica [1977, eng] **A-20272**
First environmental impact monitoring amd assessment in Antarctica. The Dry Valley Drilling Project [1977, eng] **B-19314**
Limnological survey of the Ablation Point area, Alexander Island, Antarctica [1977, eng] **B-19472**
Environmental impact in Antarctica [1978, eng] **B-19978**
Environmental appraisal for the Dry Valley Drilling Project phases III, IV, V (1973-74, 1974-75, 1975-76) [1978, eng] **B-19980**
Geobotanical regions of the Arctic and Antarctic [1977, rus] **B-20007**
Geology and the distribution of Macaroni penguin colonies at Marion Island [1978, eng] **B-21154**
Displacements between Australia, New Zealand, and Antarctica since the Late Cretaceous [1977, eng] **E-19265**
Geology of Marie Byrd Land and Eights Coast [1976, rus] **E-19277**
Geology and petrography of the northern Yamato Mountains, East Antarctica [1977, eng] **E-19311**
Emplacement of giant ophiolite nappes. 1. Mesozoic-Cenozoic examples [1977, eng] **E-19317**
Physical-geographic description of the Fildes Peninsula (South Shetland Islands) [1977, eng] **E-19372**
Geology and geological research in Antarctica—1. East Antarctica [1975, ger] **E-19397**
Reconnaissance geologic map of the Boyd Glacier quadrangle, Marie Byrd Land, Antarctica [1977, eng] **E-19400**
Reconnaissance geological map of the Guest Peninsula quadrangle, Marie Byrd Land, Antarctica [1977, eng] **E-19401**
Dry Valley Drilling Project—an international effort [1975, jap] **E-19434**
What future for antarctic geology [1977, eng] **E-19454**
Potassium-argon ages of schists from Chatham Island [1977, eng] **E-19467**
Late Mesozoic-Cenozoic history of the eastern Falkland Plateau [1977, eng] **E-19636**
Geology of the Ellsworth Mountains to Thiel Mountains ridge [1977, eng] **E-19646**
Geology of Queen Maud Mountains and Marie Byrd Land [1977, eng] **E-19647**
Geological comparison of the Shackleton Range and the Pensacola Mountains [1977, eng] **E-19649**
Geological studies of the Dufek intrusion, Pensacola Mountains, 1976-1977 [1977, eng] **E-19650**
Metamorphic basement rocks, central Transantarctic Mountains [1977, eng] **E-19652**
Japanese scientific activities in the McMurdo region, 1976-1977 [1977, eng] **E-19653**
Geology of some volcanic rocks from the Ross Island, Mount Morning and southern Victoria Land areas [1977, eng] **E-19658**
Geologic map of Antarctica: 1:2,500,000 [1977, fre] **E-19797**
Volcanic rocks of the Chatham Islands [1977, eng] **E-19805**
Report on the geology of the dry valley region, Transantarctic Mountains [1973, ita] **E-19877**
Summary of field activities of the Dry Valley Drilling Project 1972-1973 and 1973-1974 [1978, eng] **E-19981**
Sedimentologic approach to lithosphere plate restoration [1978, eng] **E-19989**
Petrography and petrology of a basanitoid flow from Hut Point Peninsula, Antarctica [1974, eng] **E-19997**
Cenozoic subsurface micropaleontology and geology of eastern Taylor Valley, Antarctica [1977, eng] **E-20000**
New occurrences of dish structure in the stratigraphic record [1977, eng] **E-20015**
Geological Society of America Cordilleran Section, 70th Annual meeting [1974, eng] **E-20070**

Geology *(cont.)*
Geological Society of America 1974 annual meetings [1974, eng] **E-20071**
Symposium on Andean and Antarctic volcanology problems [1976, eng] **E-20144**
Geology and geochemistry of Bouvet Island [1976, eng] **E-20146**
Stratigraphy of the Taylor and lower Victoria groups [1977, eng] **E-20175**
Antarctica and Gondwanaland [1978, eng] **E-20201**
Geology of the Antarctic Peninsula [1978, eng] **E-20236**
Geology of the region between the Renegar and Blue Glaciers [1978, eng] **E-20320**
Geological structure of the western part of Enderby Land [1968, eng] **E-20339**
Dry Valley Drilling Project (DVDP) Seminar-III, June 5-10, 1978 [1978, eng] **E-20362**
Geology and volcanic history of Hut Point Peninsula [1978, eng] **E-20368**
Correlation of clinopyroxene composition with environment of formation [1978, eng] **E-20375**
Metamorphic geology of the Windmill Islands [1977, eng] **E-20540**
Campbell Island geology [1978, eng] **E-20542**
Estimating plate motion from ridge and trench boundaries [1978, eng] **E-20570**
Geological structure of Mac. Robertson Land (East Antarctica) [1978, rus] **E-20600**
Geology of West Antarctica, and mineral deposits in Antarctica [1975, ger] **E-20619**
Revised reconstruction of the southern continents [1978, eng] **E-20701**
Geological materials collected at RISP Site J9 [1978, eng] **E-20703**
Beacon Supergroup in the Allan Hills, central Victoria Land, Antarctica [1977, eng] **E-20752**
SCAR Working Group on Geology [1978, eng] **E-20796**
SCAR Working Groups on Geology and Solid Earth Geophysics [1978, eng] **E-20797**
Outlying islands of Macquarie Island [1978, eng] **E-20847**
Stratigraphy of the New Mountain Sandstone [1978, eng] **E-20848**
Densities, porosities, and seismic velocities of some rocks from Victoria Land, Antarctica [1978, eng] **E-20849**
Reconnaissance study of the McMurdo volcanics northwest of the Koettlitz Glacier [1978, eng] **E-20872**
Geology and geochemistry of Mt. Dromedary Massif [1978, eng] **E-20873**
Two patterns of modern global lithogenesis and their methodology [1978, eng] **E-20902**
Antarctic mineral resources [1978, eng] **E-21079**
Evolution of marginal basins and adjacent shelves in east and southeast Asia [1978, eng] **E-21231**
Sub-antarctic islands [1975, eng] **E-21286**
Metamorphic petrology of the Sarmiento ophiolite complex, Chile [1978, eng] **E-21287**
Fossil marginal basin in the southern Andes [1974, eng] **E-21327**
Model for ocean-floor metamorphism, seismic layering and magnetism [1976, eng] **E-21328**
Nature of the oceanic crust [1976, eng] **E-21330**
Marginal basin "rocas verdes" complex from southern Chile [1976, eng] **E-21332**
Pillow talk [1978, eng] **E-21334**
Disruption of bedrock by the growth and collapse of ice lenses [1978, eng] **E-21338**
Petrologic study of the granulite-facies metamorphic rocks of Enderby Land [1978, eng] **E-21497**
Geological investigations in the Leverett Glacier area [1978, eng] **E-21498**
Geologic survey of Ruppert-Hobbs Coasts sector, Marie Byrd Land [1978, eng] **E-21499**
Plutonic rocks from the Ruppert Coast, West Antarctica [1978, eng] **E-21500**
Geologic studies in Orville Coast and eastern Ellsworth Land, Antarctic Peninsula [1978, eng] **E-21501**
Stratigraphical studies in Orville Coast and eastern Ellsworth Land [1978, eng] **E-21502**
Geologic reconnaissance of the Pre-Late Jurassic basement: Patagonian Andes [1978, eng] **E-21504**
Geologic studies in the northern Antarctic Peninsula [1978, eng] **E-21505**
Japanese scientific activities in Victoria Land 1977-1978 [1978, eng] **E-21507**
Dry Valley Drilling Project Seminar III, Tokyo [1978, eng] **E-21519**
Geology of DVDP 1 and the hyaloclastite of DVDP 3, Hut Point Peninsula, Antarctica [1978, eng] **E-21520**
Volcanic geology of the lower slopes of Mt. Morning [1978, eng] **E-21523**
Soviet geological research in Antarctica [1978, rus] **E-21697**
International studies of ice sheet and bedrock [1977, eng] **F-20279**
Radio echo sounding of the antarctic ice sheet, 1977-78 [1978, eng] **F-21533**
Geophysical studies of the Dufek intrusion, Pensacola Mountains, Antarctica, 1976-1977 [1977, eng] **L-19651**
Paleomagnetism of Ordovician lamprophyres from Taylor Valley [1977, eng] **L-20266**
Towards a more certain reconstruction of Gondwanaland [1977, eng] **L-20278**
Paleomagnetic results, Antarctic Peninsula [1978, eng] **L-20862**
Paleomagnetism of the Alcaparrosa Formation, Argentina [1978, eng] **L-21230**
See also: Economic geology; Glacial geology; Historical geology; Structural geology; Submarine geology

BIBLIOGRAPHIES
Earth science investigations in the United States Antarctic Research Program (USARP) for the period July 1, 1977 - June 30, 1978 [1978, eng] **E-20561**

INSTRUMENTS
Core splitter for Argentine-U.S. coring program [1978, eng] **E-21640**

MAPS AND CHARTS
Antarctic cartography [1977, eng] **C-19675**
Presentation of the 1:2,500,000 geologic map of Antarctica [1977, fre] **C-19753**
Geology of Shackleton Glacier area, Queen Maud Range, Transantarctic Mountains, Antarctica [1969, eng] **E-19287**
Drift of the major continental blocks since the Devonian [1977, eng] **E-19329**
Geology of Queen Maud Mountains and Marie Byrd Land [1977, eng] **E-19647**
Geological studies of the Dufek intrusion, Pensacola Mountains, 1976-1977 [1977, eng] **E-19650**
Antarctic geological map series. Sheet 11 - Cape Hinode [1978, eng] **E-20301**
Antarctic geological map series. Sheet 17—Northern Yamato Mountains (1) Mt. Fukushima [1978, eng] **E-20302**
Geology of the Saratoga Table quadrangle, Pensacola Mountains, Antarctica [1978, eng] **E-21257**
Geology of Davis Valley and Cordiner Peaks [1978, eng] **E-21258**

MODELS
Study on thermosolutal convection in saline lakes [1976, eng] **E-20227**
Genesis of volcanic rocks of Ross Island [1978, eng] **E-20373**
Inter-arc basins: a kinematic model [1978, eng] **E-20622**
Present-day plate motions [1978, eng] **E-21051**
Development and use of a mathematical model for an antarctic lake [1978, eng] **E-21238**
Alternative model for early Tertiary absolute plate motions [1978, eng] **E-21288**
Marginal basin "rocas verdes" complex from southern Chile [1976, eng] **E-21332**

Geomagnetic disturbances
Siple/Roberval VLF transmitting experiments [1977, eng] **K-19711**
Depressions in midlatitude F-region under relatively quiet geomagnetic conditions [1977, eng] **K-19803**
Note on the daily variation of the geomagnetic vertical intensity at Marion Island [1976, eng] **K-19904**
Upper atmosphere research in Antarctica [1978, eng] **K-20291**
Very low frequency radio waves in the magnetosphere [1978, eng] **K-20294**
Satellite observations of magnetic disturbances in the polar regions [1978, eng] **K-20500**
Precipitating electrons observed by sounding rockets [1978, eng] **K-20950**
Turbulence effects in the cyclotron resonance of monochromatic whistlers [1978, eng] **K-20996**

Relationship between ionospheric radiowave absorption and magnetic disturbances in Antarctica [1978, rus] **K-21459**
Correlation between cusp field-aligned currents and interplanetary magnetic field [1979, jap] **K-21680**
Results of studying electromagnetic phenomena in the Antarctic [1978, rus] **K-21688**

ACTIVITY INDICES
SD current direction changes in the vicinity of geomagnetic poles [1971, eng] **K-21088**
Observation of precipitating electrons on board the S-310JA-2 [1979, jap] **K-21675**

BAYS AND PULSATIONS
Diurnal latitude variation of the location of the dayside cusp [1977, eng] **K-19371**
Doppler shifts on whistler mode signals received at Siple Station, Antarctica [1977, eng] **K-19422**
Polarization studies of Siple-Roberval Pc 1 micropulsations [1977, eng] **K-19714**
Simultaneous occurrence of short period ionospheric and magnetic oscillations in Antarctica [1977, eng] **K-19716**
Signatures of magnetic field pulsation activity [1977, eng] **K-19717**
Magnetospheric dynamics programs at Vostok Station [1977, eng] **K-19718**
Very low frequency electromagnetic phenomena: whistlers and micropulsations [1977, eng] **K-20282**
Effect of induced currents in the sea on magnetic bays [1978, eng] **K-20285**
Controlled wave-particle interaction experiments [1978, eng] **K-20295**
Studies of geomagnetic pulsations [1978, eng] **K-20296**
Wave characteristics of magnetic Pi2 pulsations in the auroral region [1978, eng] **K-20958**
Micropulsations observed by whistler-mode transmissions [1978, eng] **K-20979**
Polarization characteristics and phase differences of Pi2 pulsations at conjugate stations [1978, eng] **K-21018**
Geomagnetic bays in Antarctica [1977, rus] **K-21136**
Position of the day cusp polar boundary [1976, eng] **K-21167**
Isolated bursts of type Pc1b geomagnetic pulsations at high latitudes [1978, eng] **K-21242**
On the quiet-time Pc5 pulsations events (spacequakes) [1979, eng] **K-21380**
Correlative Pc 1 micropulsations and particle precipitation [1978, eng] **K-21625**
Siple/Roberval magnetospheric wave-wave interaction experiments [1978, eng] **K-21626**
ISEE-1 satellite observations of signals from the Siple transmitter [1978, eng] **K-21627**
Wave-induced particle precipitation effects at Siple Station [1978, eng] **K-21628**
High time resolution studies of sudden impulses [1978, eng] **K-21634**
Behavior of the plasma layer during breakup according to Mirnyy Station data [1978, rus] **K-21690**

STORMS
Electron precipitation associated with very low frequency chorus and thunderstorm electric fields [1977, eng] **K-19712**
Structure of the bursts of auroral protons [1976, rus] **K-19776**
Sudden commencement absorption events at the South Pole [1978, eng] **K-20064**
Energetic particle precipitation from the magnetosphere [1978, eng] **K-20293**
Recent progress in antarctic auroral studies [1978, eng] **K-20297**
Relationship between polar magnetic substorms, ionospheric height rises and the occurrence of spread-F [1978, eng] **K-20408**
Power line radiation in the magnetosphere [1977, eng] **K-20510**
ULF and ionospheric conductivity variations during substorms [1978, eng] **K-20531**
Poleward expansion of ionospheric absorption regions [1978, eng] **K-20544**
Whistler observations of substorm electric fields in the nightside plasmasphere [1978, eng] **K-21059**
Low-energy electrons in the south polar cusp [1978, eng] **K-21353**
Energy flux in the solar wind and magnetospheric substorms [1978, eng] **K-21631**
Polar cap geomagnetic variations studies [1978, eng] **K-21633**
High time resolution studies of sudden impulses [1978, eng] **K-21634**
Measurements of ionospheric electric fields with antarctic sounding rockets S-210JA-24 and 25 [1979, jap] **K-21681**

Geomagnetic field
Measurement of Be-10 in 1,000- and 5,000-year-old antarctic ice [1978, eng] **F-20980**
On the role of cosmogeophysical forces in polar hydrometeorological processes [1977, eng] **I-19787**
Magnetospheric dynamics programs at Vostok Station [1977, eng] **K-19718**
Sky-Hi Station report, Dec. 1961-Feb. 1962 [1962, eng] **K-19743**
Geomagnetic field in New Zealand in 1975 [1978, eng] **K-20528**
Oscillations of the sun and the geomagnetic field [1978, eng] **K-20630**
Attitudes of the antarctic sounding rocket vehicles [1978, eng] **K-20956**
Observations carried out in the field at Kerguelen Station during the ARAKS experiment [1978, eng] **K-21426**
Measurements of electric field and auroral X-rays with antarctic balloons [1979, jap] **K-21682**
Annual variation of the geomagnetic field in polar regions [1979, jap] **K-21684**
Advantages of the Antarctic for ionospheric research [1977, eng] **K-21716**
Magnetograms and hourly values: Byrd Station, Antarctica [1964, eng] **L-19486**
Soviet-American geophysical research at Vostok Station [1978, rus] **L-21460**

ANOMALIES
Opening of Drake Passage [1977, eng] **E-19256**
Campbell Plateau and its relationship with the Ross Sea [1977, eng] **E-19258**
Displacements between Australia, New Zealand, and Antarctica since the Late Cretaceous [1977, eng] **E-19265**
Evolution of the Scotia Arc [1977, eng] **E-19316**
Ground magnetic studies of volcanic rocks in the Taylor and Wright Valleys region [1977, eng] **E-19659**
Further evidence for the Early Cretaceous breakup of Gondwanaland off southwestern Australia [1978, eng] **E-19875**
Islas Orcadas cruise 12: Cape Town to Buenos Aires [1977, eng] **J-19633**
Cruise data report: R/V *Chain* Cruise 115 Legs 3 and 4, Southlant Expedition [1974, eng] **J-21000**
Oceanographic data collected aboard R/V *Melville* during January-February 1977 as a part of FDRAKE 77 [1978, eng] **J-21379**
Oceanic and continental basements at conjugate continental margins [1976, eng] **L-19513**
Distribution of geomagnetic components, Mizuho Plateau [1977, eng] **L-19523**
Gravity anomalies and bedrock relief in Mizuho Plateau [1978, eng] **L-19823**
Bounding the thickness of the oceanic magnetized layer [1977, eng] **L-20013**
Electromagnetic anomalies in the Mirnyy Observatory area [1977, rus] **L-21135**

CONJUGACY
Vertical ionospheric soundings at Molodezhnaya Station [1977, rus] **K-19889**
Studies of geomagnetic pulsations [1978, eng] **K-20296**
Coupling of mid-latitude spread-F between conjugate stations [1977, eng] **K-20430**
Wave characteristics of magnetic Pi2 pulsations in the auroral region [1978, eng] **K-20958**
Polarization characteristics and phase differences of Pi2 pulsations at conjugate stations [1978, eng] **K-21018**
See also: Conjugate points

MAGNETIC POLES
Comparison of inferred and observed interplanetary magnetic field polarities, 1970-1972 [1975, eng] **K-21071**
SD current direction changes in the vicinity of geomagnetic poles [1971, eng] **K-21088**
Location of the South Magnetic Pole [1977, eng] **L-19349**

MAPS AND CHARTS

Distribution of geomagnetic components, Mizuho Plateau [1977, eng] **L-19523**

Antarctic geomagnetic chart completed [1978, jap] **L-20438**

SECULAR VARIATIONS

Coupling of mid-latitude spread-F between conjugate stations [1977, eng] **K-20430**

Magnetic quiet-day solar daily variations in magnetically conjugate regions [1977, eng] **K-21398**

Seasonal displacement of the auroral oval depending on geophysical data [1978, rus] **K-21462**

Correlation between cusp field-aligned currents and interplanetary magnetic field [1979, jap] **K-21680**

Magnetic field observations with sounding rockets [1979, jap] **K-21683**

Geomagnetic L-variation at SANAE, Antarctica [1978, eng] **L-21342**

SHAPE

Comparison of inferred and observed interplanetary magnetic field polarities, 1970-1972 [1975, eng] **K-21071**

Geomagnetic bays in Antarctica [1977, rus] **K-21136**

STRENGTH

Riometer studies at South Georgia [1976, eng] **K-19546**

SURVEYS

Glaciological studies on the IAGP program in a new area of Eastern Antarctica [1977, rus] **F-20172**

Distribution of geomagnetic components, Mizuho Plateau [1977, eng] **L-19523**

Aeromagnetic survey over southern Graham Land: a preliminary report [1976, eng] **L-19549**

TRANSIENT VARIATIONS

Vertical ionospheric soundings at Molodezhnaya Station [1977, rus] **K-19889**

Note on the daily variation of the geomagnetic vertical intensity at Marion Island [1976, eng] **K-19904**

Geomagnetic Sq field at successive universal times [1978, eng] **K-20235**

SD current direction changes in the vicinity of geomagnetic poles [1971, eng] **K-21088**

Polar cap geomagnetic variations studies [1978, eng] **K-21633**

Geomagnetism

Spring meeting 1978, abstracts [1978, eng] **A-21364**

Fall meeting 1978, abstracts [1978, eng] **A-21365**

Circum-Antarctic marine geology [1977, eng] **E-19254**

Geomagnetic measurement within a glaciological polygon [1978, rus] **F-20746**

Glaciological investigations along the Mirny-Pionerskaya-Dome C profile [1978, rus] **F-21389**

Glacial development and temperature trends in the Antarctic and in South America [1978, eng] **I-21385**

Sky-Hi Station report, Dec. 1961-Feb. 1962 [1962, eng] **K-19743**

Bounding the thickness of the oceanic magnetized layer [1977, eng] **L-20013**

Results and prospects of Soviet geophysical research in the Antarctic [1978, rus] **L-20675**

INSTRUMENTS

Detecting geomagnetic pulsations using a solenoid with a ferrite core [1978, eng] **K-21021**

Magnetograms and hourly values: Byrd Station, Antarctica [1964, eng] **L-19486**

Geomorphology

Research in perennial ice [1975, ger] **A-20289**

Principal findings of glaciological and geomorphological research in the McMurdo Sound region (Victoria Land) [1977, rus] **A-21140**

Littoral ecology of Marion and Prince Edward Islands (Southern Ocean) [1976, eng] **B-20835**

Islands in the wind [1977, eng] **B-20915**

Displacements between Australia, New Zealand, and Antarctica since the Late Cretaceous [1977, eng] **E-19265**

Geomorphology and glacial geology in Victoria Valley [1963, eng] **E-19271**

Geology of Marie Byrd Land and Eights Coast [1976, rus] **E-19277**

Climatic zonality of types of seacoasts [1977, rus] **E-19286**

Geology of Shackleton Glacier area, Queen Maud Range, Transantarctic Mountains, Antarctica [1969, eng] **E-19287**

Geology and petrography of the northern Yamato Mountains, East Antarctica [1977, eng] **E-19311**

Subglacial geomorphology of Mizuho Plateau and around Yamato Mountains, East Antarctica [1976, eng] **E-19331**

Geology of the Scott Glacier and Wisconsin Range area [1967, eng] **E-19398**

Geological research in the Ellsworth Mountains: Norwegian Expedition 1974-75 [1976, jap] **E-19425**

Shoreline modifications of southeastern South Georgia [1976, eng] **E-19559**

Volcanoes and volcanic rock in Antarctica [1977, jap] **E-19586**

With the Soviets in Antarctica, austral summer 1976-1977 [1977, eng] **E-19648**

Geological comparison of the Shackleton Range and the Pensacola Mountains [1977, eng] **E-19649**

Geomorphology of the ocean floor [1976, rus] **E-19740**

Geologic map of Antarctica: 1:2,500,000 [1977, fre] **E-19797**

Report on the geology of the dry valley region, Transantarctic Mountains [1973, ita] **E-19877**

First meteorites found in Victoria Land, Dec. 1976 and Jan. 1977 [1978, eng] **E-19919**

Possible mechanism of concentration of meteorites in Antarctica [1978, eng] **E-19920**

Cenozoic subsurface micropaleontology and geology of eastern Taylor Valley, Antarctica [1977, eng] **E-20000**

Geology of the Dufek intrusion in Antarctica [1975, jap] **E-20050**

Age and position of the Ellsworth Mountains crustal fragment, Antarctica [1977, eng] **E-20090**

Last glaciation of the Ross Sea, Antarctica [1977, rus] **E-20156**

Formation of the Labyrinth, Wright Valley, Antarctica [1977, eng] **E-20178**

Transverse erosional marks on ventifacts from Antarctica [1977, eng] **E-20179**

Geology of the Antarctic Peninsula [1978, eng] **E-20236**

Geological features of the western part of Enderby Land [1968, eng] **E-20340**

Geological structure of Mac. Robertson Land (East Antarctica) [1978, rus] **E-20600**

Genesis of island arcs [1977, eng] **E-20602**

Tectonic zonation and geological evolution of Antarctica [1978, rus] **E-20674**

Morphology of chasma walls, Mars [1978, eng] **E-20690**

Coastal geomorphology of high latitudes [1975, eng] **E-20692**

Geomorphological map of the Indian Ocean and Pacific Ocean antarctic sectors [1978, rus] **E-20807**

Outlying islands of Macquarie Island [1978, eng] **E-20847**

Moraines of probable Miocene age, Dry Valleys, Antarctica [1978, eng] **E-20870**

Nature of the soil of Mars: evidence from Antarctica [1978, eng] **E-20871**

Geology of the Gerlache Strait, 64-65S [1976, spa] **E-21009**

Destruction of the Early Cretaceous marginal basin in the Andes of Tierra del Fuego [1977, eng] **E-21116**

Disruption of bedrock by the growth and collapse of ice lenses [1978, eng] **E-21338**

Glacial geomorphology of the Lambert Glacier and its surrounding mountains [1977, eng] **E-21384**

Soil weathering sequences in Wright Valley [1978, eng] **E-21524**

Glacial geologic studies in the McMurdo Sound region [1978, eng] **E-21528**

Comparative study of bedrock in the Adelaide (Australia) and Ross (Antarctica) geosynclinal areas [1978, rus] **E-21698**

Comparison of geological structure of southeast Indostan and Sri Lanka with Enderby Land, Mac. Robertson Land and Princess Elizabeth Land in East Antarctica [1978, rus] **E-21699**

Geomorphological map of Antarctica (1:15,000,000) [1978, rus] **E-21704**

Antarctic coastal morphology related to underwater ice formation [1977, eng] **F-19403**

Distribution of mean surface stable isotope values [1977, eng] **F-20115**

Around the world, pole to pole, in 48 hours [1977, eng] **I-20150**

Geophysical studies in Antarctic waters with the *M.S. Explora* [1978, eng] **J-21710**

Geophysics
See: Terrestrial physics

Geothermy
See: Earth/Heat flow

Glacial eustasy
Coastal geomorphology of high latitudes [1975, eng] **E-20692**
Margin of continuous glaciation of Western Antarctica in the Ross Sea during the last glaciation maximum [1977, rus] **F-20173**
Low sea levels, droughts and mammalian extinctions [1978, eng] **J-19942**

Glacial geology
Civilization under the ice; on the threshold of the discovery of the century [1974, ita] **A-21358**
Permian and Triassic Beacon rocks near Beardmore Glacier [1968, eng] **E-19250**
Ice-rafted detritus and paleotemperature [1977, eng] **E-19259**
Geomorphology and glacial geology in Victoria Valley [1963, eng] **E-19271**
Radiocarbon dating of the last glaciation in Peru [1977, eng] **E-19374**
Geology of the Scott Glacier and Wisconsin Range area [1967, eng] **E-19398**
Stratigraphy and sediments of rocks in the Queen Maud Range area [1968, eng] **E-19462**
Shoreline modifications of southeastern South Georgia [1976, eng] **E-19559**
Sedimentology of Taylor Glacier debris [1976, eng] **E-19578**
Marine microfossils on the McMurdo Ice Shelf [1977, eng] **E-19644**
Antarctic search for meteorites [1977, eng] **E-19654**
Freshwater lakes in Pleistocene McMurdo Sound [1977, eng] **E-19666**
Late Neogene diatom biostratigraphy and paleoecology of the dry valleys and McMurdo Sound, Antarctica [1977, eng] **E-19998**
Termination of last interglacial episode and the Wilson Antarctic surge hypothesis [1978, eng] **E-20008**
Major rockfall and debris slide on the Lyell Glacier, South Georgia [1978, eng] **E-20009**
Last glaciation of the Ross Sea, Antarctica [1977, rus] **E-20156**
Formation of the Labyrinth, Wright Valley, Antarctica [1977, eng] **E-20178**
Chronology of glacial sediments in the Taylor Valley [1978, eng] **E-20361**
Sedimentation conditions in Taylor Valley, Antarctica, from DVDP cores [1978, eng] **E-20372**
Development and significance of polygenetic features in antarctic soils [1977, eng] **E-20405**
Geological materials collected at RISP Site J9 [1978, eng] **E-20703**
Dating of geochemical events in Lake Bonney, Antarctica, and their relation to glacial and climate changes [1977, eng] **E-20757**
Moraines of probable Miocene age, Dry Valleys, Antarctica [1978, eng] **E-20870**
Additional postglacial pollen diagram from Patagonia Occidental [1972, eng] **E-20905**
Phosphatic nodule beds in Victoria and the late Miocene-Pliocene eustatic event [1978, eng] **E-20961**
Gondwanan glaciation, cyclothems, continental positioning, and climate change [1978, eng] **E-21005**
Polar groundwater—a thermo-saline system [1978, eng] **E-21092**
Miocene glaciomarine sediments from beneath the southern Ross Ice Shelf, Antarctica [1979, eng] **E-21095**
Quaternary stratigraphy and glacial history of the Lower Taylor Valley, Antarctica [1978, eng] **E-21354**
Glacial geomorphology of the Lambert Glacier and its surrounding mountains [1977, eng] **E-21384**
Geological studies in the McMurdo region [1978, eng] **E-21506**
Fresh-water diatoms from perched deltas in Taylor Valley, Antarctica [1978, eng] **E-21517**
Soil weathering sequences in Wright Valley [1978, eng] **E-21524**
Ross Sea glaciations: events in Lower Victoria Valley [1978, eng] **E-21527**
Glacial geologic studies in the McMurdo Sound region [1978, eng] **E-21528**
Reconnaissance of the glacial geology of Hobbs Coast and Ruppert Coast, Marie Byrd Land [1978, eng] **E-21529**
Late Quaternary paleogeology and paleoclimatology [1978, eng] **E-21575**
Glaciological investigations near the ice sheet margin, Wilkes Station, Antarctica [1968, eng] **F-19569**
Glacier history of the McMurdo Sound region [1977, eng] **F-19676**
Microparticle analysis of the 101-meter South Pole ice core [1977, eng] **F-19681**
Ice age, past and present [1977, eng] **F-19863**
Changes in the composition of atmospheric precipitation [1977, eng] **F-20045**
Glacial deposits and the Taylor Glacier [1978, eng] **F-20319**
Observations on submerged glacial ice in McMurdo Sound, Antarctica [1978, eng] **F-20392**
Ice-rafted sediments in the Arctic and Antarctic [1976, eng] **F-20402**
Model for Holocene retreat of the West Antarctic Ice Sheet [1978, eng] **F-20857**
Symposium on the History of Antarctic Glaciation [1978, rus] **F-21392**
Paleoglaciology in Antarctica [1978, rus] **F-21696**
Climatic change [1978, eng] **I-21186**
Geological-geophysical framework of ice ages [1978, eng] **I-21187**
Cenozoic and Late Mesozoic paleooceanographic and paleoglacial history [1977, eng] **J-19261**
Deep sea drilling contributions to antarctic evolution studies [1977, eng] **J-19638**

Glacier ice
Research in perennial ice [1975, ger] **A-20289**
French cold regions tasks accomplished, 1972 [1972, fre] **A-20321**
Principal findings of glaciological and geomorphological research in the McMurdo Sound region (Victoria Land) [1977, rus] **A-21140**
"Mountains of German-Soviet friendship" in Enderby Land (Antarctica) [1977, ger] **C-21083**
Sedimentology of Taylor Glacier debris [1976, eng] **E-19578**
Ross Sea glaciations: events in Lower Victoria Valley [1978, eng] **E-21527**
Reconnaissance of the glacial geology of Hobbs Coast and Ruppert Coast, Marie Byrd Land [1978, eng] **E-21529**
Meeting of the Committee of the International Antarctic Glaciological Project (IAGP) in 1976 [1977, rus] **F-19576**
Subsurface measurements of the Ross Ice Shelf, McMurdo Sound, Antarctica [1977, eng] **F-19689**
Ice age, past and present [1977, eng] **F-19863**
Summary of work by the Physics Institute, Bern, on alpine and polar ice [1977, eng] **F-20131**
Polar glaciology [1976, spa] **F-20193**
Antarctic ice and history of world climate [1975, spa] **F-20260**
Snow and glacier studies [1975, ger] **F-20398**
French accomplishments in glaciology, 1973 [1973, fre] **F-20419**
French accomplishments in glaciology, 1975 [1976, fre] **F-20421**
French accomplishments in glaciology, 1976 [1977, fre] **F-20422**
Ice moving in sea water [1978, eng] **F-20461**
Iceberg calving from floating glaciers by a vibrating mechanism [1978, eng] **F-20571**
Antarctic glaciation and world climate [1978, rus] **F-20673**
Snow, glaciers, ice sheets [1978, pol] **F-21157**
Soviet glaciological research in 1977 [1978, rus] **F-21202**
Climatic roles of ice [1978, eng] **F-21282**
Meetings on glaciology, Zvenigorod, 1978 [1978, rus] **F-21386**
Resolutions of a Workshop of the Glaciological Section, Feb. 1978 [1978, rus] **F-21387**
Annotated list of Soviet literature on glaciology for 1975 [1978, rus] **F-21391**
Symposium on the History of Antarctic Glaciation [1978, rus] **F-21392**
Glaciology in Antarctica on the eve of the 1980's [1978, rus] **F-21695**
IAGA/IAMAP Joint Symposia, abstracts [1977, eng] **K-21361**
Crust and upper mantle dynamics in regions of continental glaciation [1969, rus] **L-19855**
Gravity evidence for a major crustal fracture in eastern Antarctica [1976, eng] **L-20696**
See also: Firn; Ice sheet

ABLATION
Hydrology-glaciology programme in Antarctica [1978, eng] **E-20309**

Glacier ice

ABLATION *(cont.)*
- Development and significance of polygenetic features in antarctic soils [1977, eng] **E-20405**
- Glacial deposits and the Taylor Glacier [1978, eng] **F-20319**
- Heat, mass, and momentum transfer effects on iceberg ablation [1978, eng] **F-20463**
- Mass balance and oscillation of Ampère Glacier, Kerguelen Is. [1978, fre] **F-20733**

ALBEDO
- Accuracy of trigonometric leveling above ice at stable stratification of temperature and refraction [1975, ger] **C-19504**

CALVING
- Flow rate and ice discharge of the Hays, Campbell and Assender Glaciers, Enderby Land, Antarctica [1977, ger] **F-21156**

CHEMICAL ANALYSIS
- Investigating atmospheric aerosol transfer by means of geochemical study of the antarctic ice sheet [1976, rus] **F-19285**

CHEMISTRY
- Changes in the composition of atmospheric precipitation [1977, eng] **F-20045**
- On the origin of mineral impurities in ice [1977, fre] **F-20112**
- Gas inclusions in glacier ice of the Arctic and Antarctic [1976, fre] **F-20845**
- Sulfate content in the antarctic ice cap [1977, eng] **F-21122**
- On the origins of mineral impurities in ice (Transl.) [1979, eng] **F-21262**

CORES
- Anelastic behaviour of polycrystalline ice [1978, eng] **F-21070**
- Mechanical tests of antarctic deep core ice under hydrostatic pressure [1979, jap] **F-21491**
- Climatic and topographic changes from glaciological data [1978, eng] **I-21109**

DEFORMATION
- Finite element calculation of ice deformation [1977, eng] **F-19677**
- Movement of the ice sheet around Mirnyy Station [1978, rus] **F-20743**
- Visco-plastic flow of glacial covers and the laws of ice deformation [1970, eng] **F-21090**
- Erebus glacier tongue movement [1978, eng] **F-21540**

DRILLING
- Ice deformation in a borehole near Vostok [1978, rus] **F-20725**
- Selecting drills for microbiological studies of deep glacier layers at Vostok Station [1978, rus] **F-20726**

ELECTRICAL PROPERTIES
- Sounding methods for ice and glacier research [1970, fre] **F-20668**
- Dielectric properties of the Ross Ice Shelf [1978, eng] **F-21069**

FLOW
- Geodetic observation methods for surveying and monitoring Antarctic outflow glaciers [1975, ger] **C-19500**
- Photogrammetric studies of a group from the G.D.R. during the 17th Soviet Antarctic Expedition [1975, ger] **C-19503**
- Geomorphology and glacial geology in Victoria Valley [1963, eng] **E-19271**
- Glaciological research in the Antarctic Peninsula [1977, eng] **F-19477**
- Theoretical steady state profile of ice sheets (two-dimensional model) [1977, eng] **F-19521**
- Strain grid for measuring glacier movement [1977, eng] **F-19527**
- Glaciological investigations near the ice sheet margin, Wilkes Station, Antarctica [1968, eng] **F-19569**
- Finite element calculation of ice deformation [1977, eng] **F-19677**
- Glaciological studies in Mizuho Plateau, East Antarctica, 1969-1975 [1978, eng] **F-19819**
- Discharge of ice across the Sôya Coast [1978, eng] **F-19837**
- Possible causes of ice sheet thinning in the Mizuho Plateau [1978, eng] **F-20187**
- Glacial deposits and the Taylor Glacier [1978, eng] **F-20319**
- Studying the antarctic ice sheet by radio-echo sounding [1978, rus] **F-20679**
- Movement of the ice sheet around Mirnyy Station [1978, rus] **F-20743**
- Geomagnetic measurement within a glaciological polygon [1978, rus] **F-20746**
- Gas inclusions in glacier ice of the Arctic and Antarctic [1976, fre] **F-20845**
- Visco-plastic flow of glacial covers and the laws of ice deformation [1970, eng] **F-21090**
- Modelling surging glaciers and periodic surging of the Antarctic ice sheet [1978, eng] **F-21113**
- Flow rate and ice discharge of the Hays, Campbell and Assender Glaciers, Enderby Land, Antarctica [1977, ger] **F-21156**
- Investigation of creep instability as a mechanism for glacier surges [1978, eng] **F-21203**
- Internal heating and surges of nontemperate glaciers [1978, rus] **F-21204**
- Climatic effects of antarctic ice sheet surge [1978, eng] **I-21110**

FORMATION
- Glacial development and temperature trends in the Antarctic and in South America [1978, eng] **I-21385**

HEAT EXCHANGE
- Energy balance at two stations of the Ampère Glacier, Kerguelen Islands [1978, fre] **F-20734**
- Oceanic fronts [and] European Geophysical Society meeting abstracts [1977, eng] **J-21362**

MASS BALANCE
- Geomorphology and glacial geology in Victoria Valley [1963, eng] **E-19271**
- Major rockfall and debris slide on the Lyell Glacier, South Georgia [1978, eng] **E-20009**
- Hydrology-glaciology programme in Antarctica [1978, eng] **E-20309**
- Global glacier mass balance variations during the past 300 years [1977, eng] **F-20046**
- Observations on submerged glacial ice in McMurdo Sound, Antarctica [1978, eng] **F-20392**
- French accomplishments in glaciology, 1974 [1975, fre] **F-20420**
- Mass balance and oscillation of Ampère Glacier, Kerguelen Is. [1978, fre] **F-20733**
- Earth science investigations on the sixth continent [1978, ger] **F-20865**
- Flow rate and ice discharge of the Hays, Campbell and Assender Glaciers, Enderby Land, Antarctica [1977, ger] **F-21156**

MECHANICAL PROPERTIES
- Dynamic glaciology [1978, eng] **F-19905**
- Thermal stresses near the surface of a glacier [1978, eng] **F-20651**
- Mass balance and oscillation of Ampère Glacier, Kerguelen Is. [1978, fre] **F-20733**
- Anelastic behaviour of polycrystalline ice [1978, eng] **F-21070**
- Visco-plastic flow of glacial covers and the laws of ice deformation [1970, eng] **F-21090**
- Flow rate and ice discharge of the Hays, Campbell and Assender Glaciers, Enderby Land, Antarctica [1977, ger] **F-21156**
- Erebus glacier tongue movement [1978, eng] **F-21540**

PHYSICAL PROPERTIES
- Dynamic glaciology [1978, eng] **F-19905**
- Observations on submerged glacial ice in McMurdo Sound, Antarctica [1978, eng] **F-20392**

SEISMIC EXPLORATION
- Bedrock topography of Ampère Glacier (Kerguelen Islands, T.A.A.F.) [1978, fre] **F-20732**
- Results of seismic observations of dynamic glacier processes at Mirnyy [1978, rus] **F-20772**

SOUNDINGS
- Sounding methods for ice and glacier research [1970, fre] **F-20668**
- Studying the antarctic ice sheet by radio-echo sounding [1978, rus] **F-20679**
- Studies of antarctic glacier structure [1978, rus] **F-20745**
- Geomagnetic measurement within a glaciological polygon [1978, rus] **F-20746**
- Radio echo soundings within glaciological polygons [1978, rus] **F-20747**

STRATIGRAPHY
- Tephra in glacier ice [1977, eng] **E-20180**

STRUCTURE
Studies of antarctic glacier structure [1978, rus] F-20745

SURFACE FEATURES
Geodetic observation methods for surveying and monitoring Antarctic outflow glaciers [1975, ger] C-19500
Measurements of a barometric altitude profile in Enderby Land, Antarctica [1975, ger] C-19502
Accuracy of trigonometric leveling above ice at stable stratification of temperature and refraction [1975, ger] C-19504
Studies of barometric leveling in Antarctica [1975, ger] C-19505
Some problems of photogrammetry in Antarctica [1976, eng] C-21393
Antarctica: a deep-freeze storehouse for meteorites [1977, eng] E-19325
Glacial geomorphology of the Lambert Glacier and its surrounding mountains [1977, eng] E-21384
Surface strain measurements on sea ice and on Erebus Glacier Tongue [1978, eng] F-21543

TEMPERATURE
Glacial deposits and the Taylor Glacier [1978, eng] F-20319
Thermal stresses near the surface of a glacier [1978, eng] F-20651
Investigation of creep instability as a mechanism for glacier surges [1978, eng] F-21203
Internal heating and surges of nontemperate glaciers [1978, rus] F-21204

THAWING
Effect of glacial ice melting on the Antarctic Surface Water [1979, eng] E-21657

THICKNESS
Radio echo soundings within glaciological polygons [1978, rus] F-20747
Radiosounding of ice [1976, eng] F-20984

VARIATIONS
Recent decline in available moisture in northern Victoria Land, Antarctica [1978, eng] F-21339
Erebus glacier tongue movement [1978, eng] F-21540

Gravity
Antarctic gravity anomaly map [1978, rus] C-21702
Kerguelen Plateau bathymetry, sediment distribution and crustal structure [1977, eng] E-19260
Islas Orcadas cruise 11, Buenos Aires to Cape Town [1977, eng] E-19634
Ross Ice Shelf geophysical survey, 1976-1977 [1977, eng] F-19686
Glaciological studies on the IAGP program in a new area of Eastern Antarctica [1977, rus] F-20172
Glaciological investigations along the Mirny-Pionerskaya-Dome C profile [1978, rus] F-21389
Ross Ice Shelf Geophysical survey, 1977-1978 [1978, eng] F-21538
On the role of cosmogeophysical forces in polar hydrometeorological processes [1977, eng] I-19787
Islas Orcadas cruise 12: Cape Town to Buenos Aires [1977, eng] J-19633
Cruise data report: R/V *Chain* Cruise 115 Legs 3 and 4, Southlant Expedition [1974, eng] J-21000
Geophysical studies in Antarctic waters with the *M.S. Explora* [1978, eng] J-21710
Regional gravity anomalies in the Atlantic Ocean [1978, rus] L-19498
Oceanic and continental basements at conjugate continental margins [1976, eng] L-19513
Geophysical studies of the Dufek intrusion, Pensacola Mountains, Antarctica, 1976-1977 [1977, eng] L-19651
Search at South Pole for the pendulum mode of the earth's inner core [1977, eng] L-19673
Gravity anomalies and bedrock relief in Mizuho Plateau [1978, eng] L-19823
Long-wavelength gravity anomalies and intraplate seismicity [1978, eng] L-19871
Basement morphology and rift geometry near the former junction of India, Australia, and Antarctica [1978, eng] L-20062
Gravity anomaly distributions and crustal structure [1978, eng] L-20085
Gravity survey in the Taylor Valley [1978, eng] L-20315
Results of aerogravimetric studies in Antarctica [1975, rus] L-20382
Proceedings of the 7th International Symposium on Earth Tides [1976, eng] L-20682
First observations of gravity tides in the central part of Antarctica [1976, ger] L-20683
Air temperature and pressure in relation to gravity in Central Antarctica [1976, eng] L-20684
Gravimetric earth-tide measurements at Kerguelen Islands [1976, eng] L-20685
Measuring gravity relationship between Mirnyy and Vostok (Antarctica) [1976, ger] L-20686
Gravimetric earth tide station Kerguelen (Indian Ocean)—Results of the first measurement period January-May 1973 [1973, ger] L-20687
Gravity evidence for a major crustal fracture in eastern Antarctica [1976, eng] L-20696
Antarctica—mean gravity anomalies [1974, eng] L-21007
Background information for Russian catalog of gravity stations [1973, eng] L-21089
Gravimetric measurements in Antarctica and their interpretation [1978, rus] L-21703

Handbooks
Snow and glacier studies [1975, ger] F-20398
Antarctic operations manual [1978, eng] G-20778
Antarctic field manual [1978, eng] G-20779
Field guide for portland cement concrete construction in Antarctica [1969, eng] G-21200
Antarctic first aid manual [1978, eng] H-20780

Heat exchange
Analysis of thermosolutal phenomena observed in McMurdo saline lakes [1978, eng] E-20376
Lake Vanda (Antarctica) revisited [1977, eng] E-20754
Thermal response to albedo reduction on antarctic snow—modeling results [1977, eng] F-19680
Glaciological studies in Mizuho Plateau, East Antarctica, 1969-1975 [1978, eng] F-19819
Accumulation and ablation at Syowa Station [1978, eng] F-19830
Environmental factors along an iceberg tow route in the Indian Ocean [1978, eng] F-20471
Numerical modeling of seasonal variations in Antarctic sea ice [1977, eng] F-20889
On melting icebergs [1978, eng] F-21061
Atmospheric processes and energy transfers at the South Pole [1977, eng] I-19700
Acoustic sounder operations at South Pole Station [1977, eng] I-19702
Surface atmospheric tides in New Zealand [1977, eng] I-20186
Role of the polar regions in global climate change [1978, eng] I-20202
Summer turbulent atmosphere-ocean exchange in the Drake Passage in 1976 [1978, rus] I-20643
Free-atmosphere energy characteristics over the Drake Passage in the summer of 1976 [1978, rus] I-20644
Meteorological problems of the Southern Ocean [1978, rus] I-20718
Influence of Southern Ocean on climate [1978, eng] I-21106
Heat balance of the Earth [1978, eng] I-21189
Global influences of mankind on the climate [1978, eng] I-21191
Climatonomical modeling of temperature response to dust contamination of antarctic snow surfaces [1977, eng] I-21377
Poleward water vapor transport for coastal East Antarctica [1978, eng] I-21622
Surface energy balance measurements at the South Pole [1976, eng] I-21662
On the abyssal temperatures of the World Oceans [1968, eng] J-19544
Antarctic oceanographic zonation [1977, eng] J-20024
Changes in the hydrological characteristics of the Southern Ocean [1977, eng] J-20025
Circulation across the ice shelf edge in McMurdo Sound, Antarctica [1977, eng] J-20028
Thermohaline convection in the vicinity of an ice shelf [1977, eng] J-20034
Results and prospects of Soviet research in the Southern Ocean [1978, rus] J-20676
Climatic characteristics of the Antarctic Polar Front Zone [1978, eng] J-20707
Deep antarctic convection west of Maud Rise [1978, eng] J-21130

Heat exchange *(cont.)*
Differences between AAIW in the southeast Pacific and the southwest Atlantic [1978, eng] **J-21554**
See also under: Glacier ice; Ice; Ice sheet; Polynyas; Sea ice; Shelf ice.
See also: Earth/Heat flow

Height determination
See: Altimetry

HF communication
Radio wave Doppler studies of the antarctic ionosphere [1977, eng] **K-19478**
Satellite link between Palmer Station and Nevada [1977, eng] **K-19728**

Hiss
See under: VLF emissions

Historical geology
Permian and Triassic Beacon rocks near Beardmore Glacier [1968, eng] **E-19250**
Geologic history of the Maurice Ewing Bank of the Falkland Plateau [1977, eng] **E-19263**
Geology of Shackleton Glacier area, Queen Maud Range, Transantarctic Mountains, Antarctica [1969, eng] **E-19287**
Geology of the Scott Glacier and Wisconsin Range area [1967, eng] **E-19398**
Geochronology of the basement rocks of the Transantarctic Mts. [1970, eng] **E-19470**
Geology of the Fosdick Mountains, Marie Byrd Land, West Antarctica [1969, eng] **E-19543**
Late Mesozoic-Cenozoic history of the eastern Falkland Plateau [1977, eng] **E-19636**
Petrology of the Dana Mountains, Antarctic Peninsula [1978, eng] **E-19779**
Early Tertiary geology of the Indian Ocean region [1978, eng] **E-19874**
Last glaciation of the Ross Sea, Antarctica [1977, rus] **E-20156**
Geology of West Antarctica, and mineral deposits in Antarctica [1975, ger] **E-20619**
Late Jurassic bivalves from Ellsworth Land [1977, eng] **E-20755**
Moraines of probable Miocene age, Dry Valleys, Antarctica [1978, eng] **E-20870**
Gondwanan glaciation, cyclothems, continental positioning, and climate change [1978, eng] **E-21005**
Late Cenozoic oxygen and carbon isotopic history and volcanic ash stratigraphy [1979, eng] **E-21180**
Glacier history of the McMurdo Sound region [1977, eng] **F-19676**
Geological-geophysical framework of ice ages [1978, eng] **I-21187**
Depositional history of the South Atlantic Ocean [1977, eng] **J-19321**
Deep sea drilling contributions to antarctic evolution studies [1977, eng] **J-19638**
See also: Geochronology

History
Newspaper articles on the JARE with the *Kainan Maru* during her calls at Wellington and Sydney in 1910-1912 [1977, jap] **A-19306**
Focus on the Falkland Islands [1971, eng] **A-19483**
Polar Rosses: John and James Clark Ross and their explorations [1973, eng] **A-19493**
History of JARE [1978, jap] **A-19760**
Decision to create JARE [1978, jap] **A-19761**
Beginnings of JARE [1978, jap] **A-19762**
Proposal for first JARE and the unsuccessful second wintering [1978, jap] **A-19763**
Role of JARE headquarters [1978, jap] **A-19764**
Recollections of JARE's early days [1978, jap] **A-19770**
Recalling 20 years of JARE [1978, jap] **A-19773**
Alluring poles; struggle for the North and South Poles [1977, ger] **A-19800**
Snow [1978, eng] **A-19862**
List of Royal Geographic Society archives on Antarctica [1976, eng] **A-20006**
This accursed land [1977, eng] **A-20011**
Scott of the Antarctic [1977, eng] **A-20012**
"Uruguayan Flag at the Pole" from the 60th parallel to the Antarctic [1976, spa] **A-20192**
Emergence of Antarctica [1978, eng] **A-20199**
French southern and antarctic territories, 1772-1972 [1973, fre] **A-20241**
Piedrabuena spends a month in Antarctica [1975, spa] **A-20255**
Maintenance of historic huts in Antarctica [1978, eng] **A-20310**
Whaling in the Southern Ocean, 1785-1825 [1972, eng] **A-20693**
Scott's men [1977, eng] **A-20864**
James Murray, F.R.S.E., 1865-1914—a belated biography [1976, eng] **A-20916**
The other Richard E. Byrd: naval officer [1978, eng] **A-20920**
Research in Antarctica [1978, eng] **A-21076**
Civilization under the ice; on the threshold of the discovery of the century [1974, ita] **A-21358**
Russian names in Antarctic toponymy [1978, rus] **A-21705**
20 years since conquest of the Pole of Inaccessibility [1979, rus] **A-21714**
Amundsen's route to the South Pole [1979, eng] **A-21717**
Penguins, whalers, and sealers: a voyage of discovery [1977, eng] **B-20497**
Ecology of a subantarctic island: 15 years on [1978, eng] **B-21318**
Maps of the polar regions through the 19th century [1978, ger] **C-20886**
Voyages to the Kerguelen Islands from 1772-1950 [1976, fre] **D-20348**
Voyage of the *Pourquoi-pas,* 1908-1910 [1978, eng] **D-20850**
Journal of the Resolution's voyage in 1771-1775 [1967, eng] **D-21181**
Outlying islands of Macquarie Island [1978, eng] **E-20847**
Natural enrichment of elements in snow [1978, eng] **F-20391**
Earth science investigations on the sixth continent [1978, ger] **F-20865**
Science Council of Japan and the JARE [1978, jap] **G-19771**
East Base, Stonington Island, Antarctic Peninsula [1978, eng] **G-21648**
Around the world, pole to pole, in 48 hours [1977, eng] **I-20150**
Historical methods of temperature measurement in arctic and antarctic waters [1978, eng] **J-21150**
Chronicles of the South Atlantic: Patagonia, Falkland Islands and Antarctica [1974, spa] **M-20174**
1906—appointment of deputies for the antarctic islands and territories [1975, spa] **M-20252**
Regional geography of Antarctica and the Southern Ocean [1978, eng] **M-21469**

Hoarfrost
Ice-coring project at Mizuho Station, East Antarctica, 1970-1975 [1978, eng] **F-21297**
Compiled stratigraphic data from cores drilled at Mizuho Station [1978, eng] **F-21307**

CHEMISTRY
Role of precipitation processes in chemistry of polar snows [1976, eng] **F-21672**

DENSITY
Anisotropy of ultrasonic wave velocities in Mizuho cores [1978, eng] **F-21305**

Humidity
Seasonal variations of meteorological elements at Mizuho Plateau [1978, eng] **I-19829**
Soviet antarctic data on temperature, humidity, and wind speed [1977, rus] **I-19842**
Vapor pressure and sublimation in Antarctica [1978, eng] **I-20082**
Summer turbulent atmosphere-ocean exchange in the Drake Passage in 1976 [1978, rus] **I-20643**
Free-atmosphere energy characteristics over the Drake Passage in the summer of 1976 [1978, rus] **I-20644**
Seasonal variability in the pole-to-pole modes of water vapor transport during the IGY [1978, eng] **I-21147**

Hydrography
Abyssal benthonic foraminifera [1978, eng] **B-20538**
Krill and hydrographic conditions off the Antarctic Peninsula [1978, eng] **B-21348**
Selective dissolution of Recent coccoliths in the Atlantic Ocean [1977, eng] **E-20568**
Islas Orcadas cruise 16 [1978, eng] **E-21558**
Estimate of spatial discreteness of deep-sea observations [1971, rus] **J-19517**

International Weddell Sea Oceanographic Expedition, 1976: tritium results [1977, eng] **J-19620**
Ross Ice Shelf Project: physical oceanography [1977, eng] **J-19621**
Oceanographic data from McMurdo Sound [1977, eng] **J-19622**
FDRAKE 77 [1977, eng] **J-19624**
Soviet-American research aboard RV *Professor Zubov* [1977, eng] **J-19627**
ARA *Islas Orcadas* cruise 6 in the Argentine Basin [1977, eng] **J-19632**
Thermohaline convection in the vicinity of an ice shelf [1977, eng] **J-20034**
Oceanographic station data collected aboard R/V *Melville* during FDRAKE 75 [1977, eng] **J-20078**
Distribution of antarctic intermediate waters in the world ocean [1978, eng] **J-20138**
Seventh voyage of the R/V *Ob'* [1968, eng] **J-20327**
Activities of the *Ob'*, 1961-62 [1968, eng] **J-20328**
Hydrographic investigations of approaches to the Antarctic station Molodezhnaya [1968, eng] **J-20338**
Oceanographic data collected aboard R/V *T.G. Thompson* during FDRAKE 76, Legs I and II [1978, eng] **J-20413**
Bottom water flow through the Kane Gap, Sierra Leone Rise, Atlantic Ocean [1975, eng] **J-20508**
Cyclonic eddy in the Antarctic Circumpolar Current south of Australia [1978, eng] **J-20553**
Cruise data report: R/V *Chain* Cruise 115 Legs 3 and 4, Southlant Expedition [1974, eng] **J-21000**
Water characteristics of the Southern Ocean south of the Polar Front [1977, eng] **J-21023**
Observations on the southwest Indian/Antarctic Ocean [1977, eng] **J-21024**
Anatomy of the Antarctic Polar Front in the Drake Passage [1978, eng] **J-21048**
Deep antarctic convection west of Maud Rise [1978, eng] **J-21130**
Isohaline thermoclines in the southeast Pacific Ocean [1978, eng] **J-21131**
Observations of antarctic polar front motions in a deep water expression [1979, eng] **J-21227**
Antiprod 1 cruise, *Marion Dufresne,* 1-28 March, 1977 [1978, fre] **J-21272**
Oceanographic data collected aboard R/V *Melville* during January-February 1977 as a part of FDRAKE 77 [1978, eng] **J-21379**
FDRAKE 77 *Yelcho* [1978, eng] **J-21549**
Eddies and ridges in the thermal structure south of New Zealand [1978, eng] **J-21550**
Temperature and salinity fields under the Ross Ice Shelf [1978, eng] **J-21551**
International Weddell Sea Oceanographic Expedition, 1978 [1978, eng] **J-21552**
Physical oceanography of the Ross Sea [1978, eng] **J-21553**
South Atlantic oceanography [1978, eng] **J-21555**

Hydrology

Spring meeting 1977, abstracts [1977, eng] **A-21360**
Littoral ecology of Marion and Prince Edward Islands (Southern Ocean) [1976, eng] **B-20835**
Influence of hydrologic conditions on the distribution of baleen whales [1973, eng] **B-21199**
Unusual drainage system in an antarctic valley [1976, eng] **E-19551**
Logging summary of the Dry Valley Drilling Project [1977, eng] **E-19665**
Evolution of the earth's cryosphere [1976, rus] **E-19972**
Paleohydrology of Taylor Valley, Antarctica inferred from pore ice in permafrost core [1977, eng] **E-19999**
Hydrology-glaciology programme in Antarctica [1978, eng] **E-20309**
World water balance and water resources of the earth [1978, eng] **E-20931**
Polar groundwater—a thermo-saline system [1978, eng] **E-21092**
Ar-39 dating of groundwater [1974, eng] **F-20603**
Meteorological constraints on hydrology studies in the dry valleys, Antarctica [1976, eng] **I-21669**
See also: Limnology

Hydromagnetic waves

Magnetic fluctuations and ionosphere conductivity changes measured at Siple Station [1977, eng] **K-19715**
Simultaneous occurrence of short period ionospheric and magnetic oscillations in Antarctica [1977, eng] **K-19716**
Studies of geomagnetic pulsations [1978, eng] **K-20296**
On the relationship of 3mHz (Pc5) electric, magnetic, and particle variations [1978, eng] **K-20623**
Wave characteristics of magnetic Pi2 pulsations in the auroral region [1978, eng] **K-20958**

Hygiene

Bacteriological study of pollution [1977, jap] **H-19303**
Dental problems in Antarctica [1976, eng] **H-19352**
Soviet antarctic research with special consideration of medical and health problems [1977, ger] **H-20394**
Morbidity of participants in the 13th Soviet-Antarctic Expedition [1975, eng] **H-20985**
Problems of adaptation and antarctic support systems [1978, rus] **H-21032**
Social and health aspects of human adaptation in polar regions [1978, rus] **H-21033**
See also: Waste disposal

Ice

Summary of environmental monitoring and impact assessment of the DVDP [1978, eng] **B-19982**
Microbial life at low temperatures: ecological aspects [1978, eng] **B-21169**
Program and instructions on the compilation of the world atlas of snow and ice resources [1977, rus] **F-19577**
Snow and glacier studies [1975, ger] **F-20398**
Activities of the Grenoble Glaciological Laboratory, 1976 [1977, fre] **F-20423**
Glaciological field stations, Parts 1 and 2 [1979, eng] **F-21291**
Road transitions between land, snow and ice [1975, eng] **G-20815**
See also: Glacier ice; Ice sheet; Pack ice; Sea ice; Shelf ice

ABLATION

Possible mechanism of concentration of meteorites in Antarctica [1978, eng] **E-19920**
Antarctic search for meteorites during the 1977-78 field season [1978, eng] **E-21525**
Topographic features of the ice sheet around the Yamato Mountains [1978, eng] **F-19921**

AGE DETERMINATION

Extraction of gases and dissolved and particulate matter from ice in deep boreholes [1977, eng] **F-20123**
Summary of work by the Physics Institute, Bern, on alpine and polar ice [1977, eng] **F-20131**
Ar-39 dating of groundwater [1974, eng] **F-20603**

BIBLIOGRAPHIES

Annotated list of Soviet literature on glaciology for 1975 [1978, rus] **F-21391**
Studies on terrestrial ice cores [1978, eng] **F-21406**

CHEMISTRY

Paleohydrology of Taylor Valley, Antarctica inferred from pore ice in permafrost core [1977, eng] **E-19999**
Gas content of ice caps [1977, fre] **F-19424**
Nitrogen in south polar ice and snow: tool to measure past solar, auroral, and cosmic ray activities [1977, eng] **F-19679**
International Symposium on Isotopes and Impurities in Snow and Ice, 1975 [1977, eng] **F-20107**
Processes responsible for the trace content in precipitation [1977, eng] **F-20111**
Stable isotope variations in snow and ice at Vostok, Antarctica [1977, eng] **F-20121**
Stable isotope homogenization of polar firn and ice [1977, eng] **F-20122**
Extraction of gases and dissolved and particulate matter from ice in deep boreholes [1977, eng] **F-20123**
Total gas content in polar ice: rheological and climatic implications [1977, eng] **F-20126**
Composition of gas contained in polar ice [1977, fre] **F-20129**
Isotope analysis of ice cores from Vostok [1977, eng] **F-20130**
Ice crystals in the Antarctic atmosphere [1976, cng] **F-20307**
Measurement of Be-10 in 1,000- and 5,000-year-old antarctic ice [1978, eng] **F-20980**
Loss of fixed nitrogen from soils by nitric oxide exhalation [1978, eng] **F-20982**

Ice

CHEMISTRY *(cont.)*

Electrical behaviour of finely divided ice [1978, eng] **F-21067**
Stratigraphic analyses of firn and ice at Mizuho Station [1978, eng] **F-21299**
Oxygen isotopic composition in the cores from Mizuho Station [1978, eng] **F-21310**
Chemistry of ice cores from Mizuho Station [1978, eng] **F-21311**
Symposium on Physics and Chemistry of Ice and the meeting of the Council of the International Antarctic Glaciological Project [1978, rus] **F-21388**
Solar activity records planetary ice caps [1978, eng] **F-21407**
Fixed nitrogen in antarctic ice and snow [1978, eng] **F-21530**
Antarctic ice core recovery [1978, eng] **F-21539**
Green iceberg samples in the Weddell Sea [1978, eng] **F-21541**
Trace elements in the antarctic atmosphere [1978, eng] **I-21616**

COMPACTION

Mechanical tests of antarctic deep core ice under hydrostatic pressure [1979, jap] **F-21491**

CONSTRUCTION

Public works, *Deep Freeze* '77 [1977, eng] **G-19732**

CORES

Meeting on the Ross Ice Shelf Project [1978, eng] **A-21175**
Compositions of three tephra layers from the Byrd Station ice core, Antarctica [1978, eng] **E-21239**
Nitrogen in south polar ice and snow: tool to measure past solar, auroral, and cosmic ray activities [1977, eng] **F-19679**
Central ice core storage facility and information exchange [1977, eng] **F-19693**
Isotope analysis of ice cores from Vostok [1977, eng] **F-20130**
New Zealand work at Vostok Station [1978, eng] **F-20308**
Chemistry of 700 years of precipitation at Dye 3, Greenland [1975, eng] **F-20599**
Design and operation of the ice core data bank [1976, eng] **F-20604**
Measurement of Be-10 in 1,000- and 5,000-year-old antarctic ice [1978, eng] **F-20980**
Electrical behaviour of finely divided ice [1978, eng] **F-21067**
Ice-coring project at Mizuho Station, East Antarctica, 1970-1975 [1978, eng] **F-21297**
Outline of the drilling operation at Mizuho Station [1978, eng] **F-21298**
Stratigraphic analyses of firn and ice at Mizuho Station [1978, eng] **F-21299**
Firn and ice core structure at Mizuho Station [1978, eng] **F-21300**
Electrical behaviors of antarctic ice drilled at Mizuho Station, East Antarctica [1978, eng] **F-21302**
Stress-strain tests of an ice core from Mizuho Station [1978, eng] **F-21303**
Internal friction of antarctic Mizuho ice cores at low frequency [1978, eng] **F-21304**
Extinction coefficient of light in Mizuho ice cores [1978, eng] **F-21306**
Compiled stratigraphic data from cores drilled at Mizuho Station [1978, eng] **F-21307**
Compiled density data from cores drilled at Mizuho Station [1978, eng] **F-21308**
Petrographic data from cores drilled at Mizuho Station [1978, eng] **F-21309**
Oxygen isotopic composition in the cores from Mizuho Station [1978, eng] **F-21310**
Chemistry of ice cores from Mizuho Station [1978, eng] **F-21311**
Solar activity records planetary ice caps [1978, eng] **F-21407**
Ultrasonic measurements on deep ice cores from Antarctica [1978, eng] **F-21530**
905-meter deep core drilling at dome C and related surface programs [1978, eng] **F-21532**
Glaciology near Byrd Station [1978, eng] **F-21534**
Antarctic ice core recovery [1978, eng] **F-21539**
Tritium and carbon-14 distributions in McMurdo Sound, 1977 [1978, eng] **J-21545**

CRYSTALS

Adsorption inhibition as a mechanism of freezing resistance in polar fishes [1977, eng] **B-20021**
Ultrasonic measurements on ice cores from Ross Ice Shelf [1977, eng] **F-19690**
Optical effects resulting from airborne ice crystals [1977, eng] **F-19703**
Application of the continuity equation to the ice sheet, Byrd Station [1977, eng] **F-19801**
East Antarctic pack ice [1977, rus] **F-19841**
Impurities and seismic wave attenuation in the West Antarctic ice sheet [1977, eng] **F-20108**
Terrestrial and marine sources for atmospheric ice nuclei [1976, eng] **F-20306**
Ice crystals in the Antarctic atmosphere [1976, eng] **F-20307**
Radio-frequency birefringence of polar ice [1978, eng] **F-21068**
Firn and ice core structure at Mizuho Station [1978, eng] **F-21300**
Petrographic data from cores drilled at Mizuho Station [1978, eng] **F-21309**
Microwave emission from polar firn [1978, eng] **F-21376**
Symposium on Physics and Chemistry of Ice and the meeting of the Council of the International Antarctic Glaciological Project [1978, rus] **F-21388**
Ultrasonic measurements on deep ice cores from Antarctica [1978, eng] **F-21530**
Lidar and replication studies of ice crystal precipitation at the South Pole [1977, eng] **I-19701**
On the nature of persistent stratospheric clouds in the Antarctic [1977, eng] **I-19816**
Atmospheric halos [1978, eng] **I-19941**
Dry ice = Antarctica [1978, eng] **I-21077**
Atmospheric ice crystals at the South Pole in summer [1978, eng] **I-21609**
Lidar and replicator measurements of ice crystal precipitation at South Pole [1976, eng] **I-21671**
Thermohaline convection in the vicinity of an ice shelf [1977, eng] **J-20034**

DEFORMATION

Effect of impurities on the creep of ice 1h [1977, eng] **F-20109**
Ice deformation in a borehole near Vostok [1978, rus] **F-20725**

DENSITY

Application of the continuity equation to the ice sheet, Byrd Station [1977, eng] **F-19801**
Compiled density data from cores drilled at Mizuho Station [1978, eng] **F-21308**

DISTRIBUTION

Development of moss-peat banks in relation to changing climate and ice cover on Signy Island in the maritime Antarctic [1976, eng] **B-19552**

DRILLING

Ross Ice Shelf Project [1979, eng] **F-21094**
905-meter deep core drilling at dome C and related surface programs [1978, eng] **F-21532**

ELECTRICAL PROPERTIES

Electrical behaviour of finely divided ice [1978, eng] **F-21067**
Electrical behaviors of antarctic ice drilled at Mizuho Station, East Antarctica [1978, eng] **F-21302**

EXCAVATIONS

Ice excavation machine [1977, eng] **G-20776**

FLOW

Antarctic search for meteorites during the 1977-78 field season [1978, eng] **E-21525**
Effect of impurities on the creep of ice 1h [1977, eng] **F-20109**
Distribution of mean surface stable isotope values [1977, eng] **F-20115**
Stable isotope homogenization of polar firn and ice [1977, eng] **F-20122**
Ice sheet topography by satellite altimetry [1978, eng] **F-20414**
Ice moving in sea water [1978, eng] **F-20461**
Inland ice sheet thinning due to Holocene warmth [1978, eng] **F-20572**
Studying the antarctic ice sheet by radio-echo sounding [1978, rus] **F-20679**
Equilibrium state of the eastern half of the Ross Ice Shelf [1978, eng] **F-21336**
Radio echo sounding of the antarctic ice sheet, 1977-78 [1978, eng] **F-21533**

FORECASTING

U.S. Navy global ice analysis and forecasting [1978, eng] **F-20751**

FORMATION
Disruption of bedrock by the growth and collapse of ice lenses [1978, eng] **E-21338**
Terrestrial and marine sources for atmospheric ice nuclei [1976, eng] **F-20306**
Ice crystals in the Antarctic atmosphere [1976, eng] **F-20307**

HEAT EXCHANGE
Heat, mass, and momentum transfer effects on iceberg ablation [1978, eng] **F-20463**

INSTRUMENTS
Polar sub-programme of GARP [1978, eng] **A-20983**
Dielectric constant and reflection coefficient of snow surface layers in the McMurdo Ice Shelf [1977, eng] **F-19682**
Iceberg thickness profiling using an impulse radar [1977, eng] **F-19684**
Ross Ice Shelf Project drilling, October-December 1976 [1977, eng] **F-19691**
Iceberg thickness and crack detection [1978, eng] **F-20457**
Using side-looking radar for studying ice undersurfaces [1978, rus] **F-20616**
Instruments for studying underwater portions of Southern Ocean icebergs [1978, rus] **F-20654**
Studying the antarctic ice sheet by radio-echo sounding [1978, rus] **F-20679**
Ice drilling at Site J9 [1978, eng] **F-20788**
Radar reflections of submerged parts of icebergs [1979, eng] **F-21263**
Outline of the drilling operation at Mizuho Station [1978, eng] **F-21298**
Inclination of the hole drilled by JARE-13 [1978, eng] **F-21313**
Access hole drilling through the Ross Ice Shelf [1978, eng] **F-21536**
New 60-megahertz antenna array for radio echo sounding [1978, eng] **G-21643**
Lidar and replication studies of ice crystal precipitation at the South Pole [1977, eng] **I-19701**
Air-sea interaction studies using an X-band radar at Palmer Station [1977, eng] **I-19707**
Geophysical studies in Antarctic waters with the *M.S. Explora* [1978, eng] **J-21710**

LUMINESCENCE
Optical effects resulting from airborne ice crystals [1977, eng] **F-19703**
Extinction coefficient of light in Mizuho ice cores [1978, eng] **F-21306**

MAPS AND CHARTS
Effect of impurities on the creep of ice Ih [1977, eng] **F-20109**
Soviet glaciological studies in 1976 [1977, rus] **F-20171**
U.S. Navy global ice analysis and forecasting [1978, eng] **F-20751**
Use of infrared and visible imagery for sea ice monitoring [1978, eng] **F-21066**

MECHANICAL PROPERTIES
Axial double point-load tests on snow and ice [1978, eng] **F-20067**
Critical look at the iceberg utilization project [1978, eng] **F-20453**
Iceberg calving from floating glaciers by a vibrating mechanism [1978, eng] **F-20571**
Creep rupture at depth in a cold ice sheet [1978, eng] **F-20981**
Stress-strain tests of an ice core from Mizuho Station [1978, eng] **F-21303**
Internal friction of antarctic Mizuho ice cores at low frequency [1978, eng] **F-21304**
Mechanical tests of antarctic deep core ice under hydrostatic pressure [1979, jap] **F-21491**
Glaciological measurements on the Ross Ice Shelf [1978, eng] **F-21537**
Surface strain measurements on sea ice and on Erebus Glacier Tongue [1978, eng] **F-21543**

MODELS
Adsorption inhibition as a mechanism of freezing resistance in polar fishes [1977, eng] **B-20021**
Stable isotope homogenization of polar firn and ice [1977, eng] **F-20122**
Microwave radiometry of ice and snow [1975, eng] **F-20238**
Some mechanisms for the calving of icebergs [1978, eng] **F-20459**
Ice moving in sea water [1978, eng] **F-20461**
Small scale modeling of iceberg transport [1978, eng] **F-20464**
Yields and energetics in moving unprotected icebergs to southern continents [1978, eng] **F-20476**
Iceberg calving from floating glaciers by a vibrating mechanism [1978, eng] **F-20571**
Thermal stresses near the surface of a glacier [1978, eng] **F-20651**
Numerical simulation of the annual cycle of sea ice [1978, eng] **F-20700**
Model for Holocene retreat of the West Antarctic Ice Sheet [1978, eng] **F-20857**
Numerical modeling of seasonal variations in Antarctic sea ice [1977, eng] **F-20889**
Summary of a large-scale sea-ice model [1977, eng] **F-20890**
Modelling surging glaciers and periodic surging of the Antarctic ice sheet [1978, eng] **F-21113**
Large-scale numerical model of sea ice [1979, eng] **F-21132**
Investigation of creep instability as a mechanism for glacier surges [1978, eng] **F-21203**
Model for melting of ice in sea water [1979, eng] **F-21226**
Climatic roles of ice [1978, eng] **F-21282**
Numerical modelling of iceberg towing for water supplies—a case study [1978, eng] **F-21337**
Numerical model of antarctic sea ice [1978, eng] **F-21542**
Climatic and topographic changes from glaciological data [1978, eng] **I-21109**

PHYSICAL PROPERTIES
Critical look at the iceberg utilization project [1978, eng] **F-20453**
Small scale modeling of iceberg transport [1978, eng] **F-20464**
Radiosounding of ice [1976, eng] **F-20984**
Radio-frequency birefringence of polar ice [1978, eng] **F-21068**
Short-wave radiation attenuation by ice and snow [1977, rus] **F-21138**
Symposium on Physics and Chemistry of Ice and the meeting of the Council of the International Antarctic Glaciological Project [1978, rus] **F-21388**
Antarctic ice core recovery [1978, eng] **F-21539**

POLLUTION
On the origin of mineral impurities in ice [1977, fre] **F-20112**
Ecological aspects of iceberg transport from antarctic waters [1978, eng] **F-20485**
On the origins of mineral impurities in ice (Transl.) [1979, eng] **F-21262**

RADIATION
Short-wave radiation attenuation by ice and snow [1977, rus] **F-21138**
Gamma ray activity from radioactive fallout at the South Pole [1978, eng] **I-21620**

SOUNDINGS
Using side-looking radar for studying ice undersurfaces [1978, rus] **F-20616**
Radiosounding of ice [1976, eng] **F-20984**

STRATIGRAPHY
Stratigraphic analyses of firn and ice at Mizuho Station [1978, eng] **F-21299**
Compiled stratigraphic data from cores drilled at Mizuho Station [1978, eng] **F-21307**

STRUCTURE
Effect of hydrostatic pressure on air bubbles in ice [1977, eng] **F-20110**
Electrical behaviour of finely divided ice [1978, eng] **F-21067**
Firn and ice core structure at Mizuho Station [1978, eng] **F-21300**
Petrographic data from cores drilled at Mizuho Station [1978, eng] **F-21309**

SURFACE FEATURES
Atmospheric surface layer over bare ice in the Yamato Mountains [1978, jap] **F-20083**

TEMPERATURE
Ross Ice Shelf Project [1979, eng] **F-21094**
Temperature profile in the drilled hole [1978, eng] **F-21312**
Glaciological investigations along the Mirny-Pionerskaya-Dome C profile [1978, rus] **F-21389**

THAWING
Unusual drainage system in an antarctic valley [1976, eng] E-19551
Ice moving in sea water [1978, eng] F-20461
Iceberg melting during transport from Antarctica to Arabia [1978, rus] F-21390

THICKNESS
Numerical simulation of the annual cycle of sea ice [1978, eng] F-20700
Numerical model of antarctic sea ice [1978, eng] F-21542
Geophysical studies of the Dufek intrusion, Pensacola Mountains, Antarctica, 1976-1977 [1977, eng] L-19651

VARIATIONS
Total gas content in polar ice: rheological and climatic implications [1977, eng] F-20126

Ice breaking
Moving ice [1978, eng] F-21078
Cost of U.S. antarctic research [1971, eng] G-19960
Ice excavation machine [1977, eng] G-20776
Deep Freeze 1979 Cruise Report [1979, eng] G-21488
Problems of exploitation and conservation of the ocean [1977, rus] J-20517
See also: Icebreakers

Ice-free areas
Bibliography of international dry valley publications, 1907-1977 [1978, eng] A-20588
Geobotanical regions of the Arctic and Antarctic [1977, rus] B-20007
Life found inside antarctic rocks [1978, eng] B-21223
Study of strontium isotopes in lakes and surficial deposits of the ice-free valleys, Southern Victoria Land, Antarctica [1978, eng] E-20164
Interpretation of levelings and radiocarbon dating of Showa beaches [1977, eng] E-20226
Dry Valley Drilling Project (DVDP) Seminar-III, June 5-10, 1978 [1978, eng] E-20362
Geochemistry of Ferrar dolerite from Don Juan Pond [1978, eng] E-20367
Nature of the soil of Mars: evidence from Antarctica [1978, eng] E-20871
Dry Valley Drilling Project Seminar III, Tokyo [1978, eng] E-21519
Vanda Station—oasis in dry valleys [1978, eng] G-20313
Polar dry deserts [1974, eng] I-20596
Meteorological constraints on hydrology studies in the dry valleys, Antarctica [1976, eng] I-21669
Characteristics of tidal phenomena in bays in the Schirmacher Ponds [1978, rus] J-20721
See also: Polynyas

Ice sheet
Mining in Antarctica [1976, eng] A-19737
Discussion on scientific research in Antarctica [1977, eng] A-20272
Fifty-first annual report on the work of the Scott Polar Research Institute [1978, eng] A-20323
Meeting on the Ross Ice Shelf Project [1978, eng] A-21175
Environmental impact in Antarctica [1978, eng] B-19978
Radiocarbon dating of the last glaciation in Peru [1977, eng] E-19374
Marine microfossils on the McMurdo Ice Shelf [1977, eng] E-19644
Freshwater lakes in Pleistocene McMurdo Sound [1977, eng] E-19666
Termination of last interglacial episode and the Wilson Antarctic surge hypothesis [1978, eng] E-20008
Gondwanan glaciation, cyclothems, continental positioning, and climate change [1978, eng] E-21005
Elastic and viscoelastic analyses of sea-ice sheets [1977, eng] F-19510
Fluctuation of the antarctic ice sheet and the Quaternary [1977, jap] F-19584
Glacier history of the McMurdo Sound region [1977, eng] F-19676
Central ice core storage facility and information exchange [1977, eng] F-19693
Glaciological research program on Mizuho Plateau, 1969-1975 [1978, eng] F-19820
Mass input in the Shirase and Soya drainage basins [1978, eng] F-19834
Discharge of ice across the Sôya Coast [1978, eng] F-19837
Factors controlling oxygen isotopic composition of fallen snow in Antarctica [1978, eng] F-19880
Dynamic glaciology [1978, eng] F-19905
Processes responsible for the trace content in precipitation [1977, eng] F-20111
Summary of work by the Physics Institute, Bern, on alpine and polar ice [1977, eng] F-20131
New Zealand work at Vostok Station [1978, eng] F-20308
Effect of antarctic glaciation on global climate [1978, rus] F-20806
Model for Holocene retreat of the West Antarctic Ice Sheet [1978, eng] F-20857
Snow, glaciers, ice sheets [1978, pol] F-21157
Recent changes in snow and ice [1978, eng] F-21190
Ice-coring project at Mizuho Station, East Antarctica, 1970-1975 [1978, eng] F-21297
Anisotropy of ultrasonic wave velocities in Mizuho cores [1978, eng] F-21305
Symposium on the History of Antarctic Glaciation [1978, rus] F-21392
Ultrasonic measurements on deep ice cores from Antarctica [1978, eng] F-21530
Glaciology in Antarctica on the eve of the 1980's [1978, rus] F-21695
High-level and long-lived radioactive waste disposal [1977, eng] G-19327
Nuclear energy risks and nuclear waste disposal in ice [1976, ger] G-19355
Disposal of radioactive wastes in the antarctic ice sheet: an environmental impact assessment [1978, eng] G-19984
Around the world, pole to pole, in 48 hours [1977, eng] I-20150
Polar Sub-programme [1978, eng] I-20823
Effects of human activities on global climate; a summary, with consideration of the implications of a possibly warmer earth [1977, eng] I-20957
Climatic change and variability: a southern perspective [1978, eng] I-21105
Climatic change [1978, eng] I-21186
Geological-geophysical framework of ice ages [1978, eng] I-21187
Global influences of mankind on the climate [1978, eng] I-21191
See also: Glacier ice

ABLATION
Ice budget of Antarctica [1978, eng] F-21340

ACCUMULATION
Ice budget of Antarctica [1978, eng] F-21340

AGE DETERMINATION
Terrestrial ages of four Allan Hills meteorites [1979, eng] E-21104
Oxygen isotope studies on Cenozoic temperatures, oceans and ice accumulation [1977, eng] F-20443
Studies on terrestrial ice cores [1978, eng] F-21406
Paleoglaciology in Antarctica [1978, rus] F-21696
Measurement of argon isotopes in air samples and comparison with computations from a model [1973, ger] I-19344

ALBEDO
Microwave radiometry of ice and snow [1975, eng] F-20238

AREA
Influence of climatic and glaciological factors on paleotemperature of continental ice sheets [1976, rus] F-19973

CHEMICAL ANALYSIS
Investigating atmospheric aerosol transfer by means of geochemical study of the antarctic ice sheet [1976, rus] F-19285

CHEMISTRY
Mercury profile of Mizuho ice sheet [1977, jap] F-19293
Chemical constituents in the surface snow in Mizuho Plateau [1978, eng] F-19839
Non-biogenic fixed nitrogen in Antarctica and some ecological implications [1978, eng] F-19915
Changes in the composition of atmospheric precipitation [1977, eng] F-20045
Isotopes, climate and ice sheet dynamics [1977, eng] F-20124

Dyke-sill thermal convection in polar ice sheets [1977, eng] F-20127
Variations in Greenland and Antarctic deep ice cores [1977, eng] F-20128
Vertical structure of the ice sheet near Vostok [1978, rus] F-20681
Influence of aerosols on geochemistry of polar snow [1978, fre] F-21280
Studies on terrestrial ice cores [1978, eng] F-21406
Isotope studies [1978, eng] I-21188
Non-biogenic fixed nitrogen in antarctic surface waters [1978, eng] J-20991

CORES
Mercury profile of Mizuho ice sheet [1977, jap] F-19293
Internal structure and crystal fabrics of the West Antarctic ice sheet [1976, eng] F-19330
Gas content of ice caps [1977, fre] F-19424
Influence of climatic and glaciological factors on paleotemperature of continental ice sheets [1976, rus] F-19973
Changes in the composition of atmospheric precipitation [1977, eng] F-20045
Isotopes, climate and ice sheet dynamics [1977, eng] F-20124
Variations in Greenland and Antarctic deep ice cores [1977, eng] F-20128
X-ray diffraction topographic studies of Antarctic deep core ice [1978, eng] F-20211
French accomplishments in glaciology, 1974 [1975, fre] F-20420
Surface variability and ice core stratigraphy [1978, eng] F-20652
Vertical structure of the ice sheet near Vostok [1978, rus] F-20681
Studies on terrestrial ice cores [1978, eng] F-21406

CRYSTALS
X-ray diffraction topographic studies of Antarctic deep core ice [1978, eng] F-20211

DEFORMATION
Distribution of surface structures of the ice sheet in Mizuho Plateau [1978, eng] F-19822
Antarctic ice sheet deformation [1978, rus] F-20744

DENSITY
Internal properties of the ice sheet at Cape Folger by radio echo sounding [1978, eng] F-20356

DESTRUCTION
West Antarctic ice sheet and CO2 greenhouse effect: a threat of disaster [1978, eng] F-19878
Margin of continuous glaciation of Western Antarctica in the Ross Sea during the last glaciation maximum [1977, rus] F-20173

DISTRIBUTION
Spacecraft in glaciological investigations [1977, rus] F-20157

DRILLING
Investigation of a subglacial lake near Molodezhnaya Station [1977, rus] E-19796
Artificial borehole deflection in Antarctica [1977, rus] F-19884
Ice deformation in a borehole near Vostok [1978, rus] F-20725
Outline of the drilling operation at Mizuho Station [1978, eng] F-21298

FLOW
Proceedings of the second Symposium on Yamato Meteorites [1978, eng] E-19916
Yamato-74 meteorites [1978, eng] E-19917
Possible mechanism of concentration of meteorites in Antarctica [1978, eng] E-19920
Bedrock topography deduced from radar echoes [1978, eng] E-20084
Application of the continuity equation to the ice sheet, Byrd Station [1977, eng] F-19801
Surface flow and strain of the ice sheet [1978, eng] F-19835
Flow line of the ice sheet over Mizuho Plateau [1978, eng] F-19836
Topographic features of the ice sheet around the Yamato Mountains [1978, eng] F-19921
Movement of the ice sheet around Mirnyy Station [1978, rus] F-20743
Modelling surging glaciers and periodic surging of the Antarctic ice sheet [1978, eng] F-21113
Creep instability analysis of the Antarctic and Greenland ice sheets [1979, eng] F-21317
Glaciology near Byrd Station [1978, eng] F-21534
Climatic and topographic changes from glaciological data [1978, eng] I-21109

FORMATION
Effect of antarctic ice cover on Chilean marine faunas [1978, eng] B-21516

HEAT EXCHANGE
Dyke-sill thermal convection in polar ice sheets [1977, eng] F-20127
Soviet glaciological studies in 1976 [1977, rus] F-20171
Creep instability analysis of the Antarctic and Greenland ice sheets [1979, eng] F-21317

MASS BALANCE
Theoretical steady state profile of ice sheets (two-dimensional model) [1977, eng] F-19521
Glaciological investigations near the ice sheet margin, Wilkes Station, Antarctica [1968, eng] F-19569
Application of the continuity equation to the ice sheet, Byrd Station [1977, eng] F-19801
Glaciological studies in Mizuho Plateau, East Antarctica, 1969-1975 [1978, eng] F-19819
Surface flow and strain of the ice sheet [1978, eng] F-19835
Mass budget of the Mizuho Plateau ice sheet [1978, eng] F-19840
Global glacier mass balance variations during the past 300 years [1977, eng] F-20046
Glacial mass balance of Antarctica [1965, rus] F-20052
Antarctic mass balance studies [1974, eng] F-20057
Ice sheet topography by satellite altimetry [1978, eng] F-20414
Surface variability and ice core stratigraphy [1978, eng] F-20652
Studying the antarctic ice sheet by radio-echo sounding [1978, rus] F-20679
Ice budget of Antarctica [1978, eng] F-21340

MECHANICAL PROPERTIES
Internal structure and crystal fabrics of the West Antarctic ice sheet [1976, eng] F-19330
Surface flow and strain of the ice sheet [1978, eng] F-19835
Flow line of the ice sheet over Mizuho Plateau [1978, eng] F-19836
Earth science investigations on the sixth continent [1978, ger] F-20865
Creep instability analysis of the Antarctic and Greenland ice sheets [1979, eng] F-21317

MORPHOLOGY
Glacial geomorphology of the Lambert Glacier and its surrounding mountains [1977, eng] E-21384

PHYSICAL PROPERTIES
Geodetic and meteorological investigations of ground refraction over antarctic continental ice [1978, rus] C-21463
Internal properties of the ice sheet at Cape Folger by radio echo sounding [1978, eng] F-20356

POLLUTION
Impurities and seismic wave attenuation in the West Antarctic ice sheet [1977, eng] F-20108
Climatonomical modeling of temperature response to dust contamination of antarctic snow surfaces [1977, eng] I-21377

RADIOACTIVITY
Disposal of radioactive waste in ice sheets [1977, eng] G-19759

SEISMIC EXPLORATION
Impurities and seismic wave attenuation in the West Antarctic ice sheet [1977, eng] F-20108
Investigations of seismic wave propagation in anisotropic and inhomogeneous media [1974, eng] F-20782
Creep rupture at depth in a cold ice sheet [1978, eng] F-20981

SOUNDINGS
Investigation of a subglacial lake near Molodezhnaya Station [1977, rus] E-19796
Bedrock topography deduced from radar echoes [1978, eng] E-20084
Glaciological research in the Antarctic Peninsula [1977, eng] F-19477
International studies of ice sheet and bedrock [1977, eng] F-20279
Internal properties of the ice sheet at Cape Folger by radio echo sounding [1978, eng] F-20356

Ice sheet

SOUNDINGS *(cont.)*

Studying the antarctic ice sheet by radio-echo sounding [1978, rus] **F-20679**

Radio echo sounding of the antarctic ice sheet, 1977-78 [1978, eng] **F-21533**

Antarctic airborne radio echo sounding, 1977-78 [1978, eng] **G-21152**

STRATIGRAPHY

Surface variability and ice core stratigraphy [1978, eng] **F-20652**

STRUCTURE

Internal structure and crystal fabrics of the West Antarctic ice sheet [1976, eng] **F-19330**

Vertical structure of the ice sheet near Vostok [1978, rus] **F-20681**

SURFACE FEATURES

Glacial surface marking trials [1977, rus] **C-19579**

Antarctica: a deep-freeze storehouse for meteorites [1977, eng] **E-19325**

Proceedings of the second Symposium on Yamato Meteorites [1978, eng] **E-19916**

Yamato-74 meteorites [1978, eng] **E-19917**

Collection of Yamato meteorites, 1975-76 [1978, eng] **E-19918**

First meteorites found in Victoria Land, Dec. 1976 and Jan. 1977 [1978, eng] **E-19919**

Possible mechanism of concentration of meteorites in Antarctica [1978, eng] **E-19920**

Glaciological investigations near the ice sheet margin, Wilkes Station, Antarctica [1968, eng] **F-19569**

Morphological feature of the ice sheet in Mizuho Plateau [1978, eng] **F-19821**

Distribution of surface structures of the ice sheet in Mizuho Plateau [1978, eng] **F-19822**

Distribution of surface features of snow cover in Mizuho Plateau [1978, eng] **F-19824**

Flow line of the ice sheet over Mizuho Plateau [1978, eng] **F-19836**

Topographic features of the ice sheet around the Yamato Mountains [1978, eng] **F-19921**

Ice sheet topography by satellite altimetry [1978, eng] **F-20414**

Stratigraphic analyses of firn and ice at Mizuho Station [1978, eng] **F-21299**

Vertical structure of katabatic winds in Mizuho Plateau [1978, eng] **I-19826**

TEMPERATURE

Glaciological investigations near the ice sheet margin, Wilkes Station, Antarctica [1968, eng] **F-19569**

Influence of climatic and glaciological factors on paleotemperature of continental ice sheets [1976, rus] **F-19973**

Microwave radiometry of ice and snow [1975, eng] **F-20238**

Inland ice sheet thinning due to Holocene warmth [1978, eng] **F-20572**

Effects of human activities on global climate [1977, eng] **I-19491**

Is mankind warming the Earth [1978, eng] **I-20105**

THAWING

Effect of climatic warming on the West Antarctic ice sheet [1979, eng] **F-21404**

THICKNESS

Bedrock topography deduced from radar echoes [1978, eng] **E-20084**

Application of the continuity equation to the ice sheet, Byrd Station [1977, eng] **F-19801**

Morphological feature of the ice sheet in Mizuho Plateau [1978, eng] **F-19821**

International studies of ice sheet and bedrock [1977, eng] **F-20279**

Internal properties of the ice sheet at Cape Folger by radio echo sounding [1978, eng] **F-20356**

Studying the antarctic ice sheet by radio-echo sounding [1978, rus] **F-20679**

Climatic and topographic changes from glaciological data [1978, eng] **I-21109**

Gravity anomalies and bedrock relief in Mizuho Plateau [1978, eng] **L-19823**

VARIATIONS

Isotopes, climate and ice sheet dynamics [1977, eng] **F-20124**

Possible causes of ice sheet thinning in the Mizuho Plateau [1978, eng] **F-20187**

Ice-rafted sediments in the Arctic and Antarctic [1976, eng] **F-20402**

Inland ice sheet thinning due to Holocene warmth [1978, eng] **F-20572**

Modelling surging glaciers and periodic surging of the Antarctic ice sheet [1978, eng] **F-21113**

Glaciology near Byrd Station [1978, eng] **F-21534**

Climatic and topographic changes from glaciological data [1978, eng] **I-21109**

Climatic effects of antarctic ice sheet surge [1978, eng] **I-21110**

Theories of Upper Quaternary ice ages [1978, eng] **I-21112**

Glacial development and temperature trends in the Antarctic and in South America [1978, eng] **I-21385**

VOLUME

Glacial mass balance of Antarctica [1965, rus] **F-20052**

Ice sheet topography by satellite altimetry [1978, eng] **F-20414**

Icebergs

Antarctic icebergs [1976, ger] **F-19366**

Soviet antarctic expedition bulletin, vol. 92, 1976: selected articles [1977, eng] **F-19402**

Some elements of iceberg technology [1978, eng] **F-20068**

Icebergs in the Southern Ocean [1976, eng] **F-20247**

Potential application of remote sensing in locating and tracking of antarctic icebergs [1978, eng] **F-20458**

U.S. Navy global ice analysis and forecasting [1978, eng] **F-20459**

Small scale modeling of iceberg transport [1978, eng] **F-20464**

Feasibility of using paddle-wheels for the propulsion of icebergs [1978, eng] **F-20466**

Self propelled iceberg [1978, eng] **F-20470**

On melting icebergs [1978, eng] **F-21061**

Moving ice [1978, eng] **F-21078**

Model for melting of ice in sea water [1979, eng] **F-21226**

Iceberg melting during transport from Antarctica to Arabia [1978, rus] **F-21390**

Green iceberg samples in the Weddell Sea [1978, eng] **F-21541**

Unloading of an IL-14 aircraft onto a giant iceberg [1977, eng] **G-19409**

Implications of outer space technology in meteorology [1975, eng] **I-20859**

Non-biogenic fixed nitrogen in antarctic surface waters [1978, eng] **J-20991**

Soviet research in the Southern Ocean [1978, rus] **J-21693**

ABLATION

Heat, mass, and momentum transfer effects on iceberg ablation [1978, eng] **F-20463**

CALVING

Some mechanisms for the calving of icebergs [1978, eng] **F-20459**

Iceberg calving from floating glaciers by a vibrating mechanism [1978, eng] **F-20571**

Melting of antarctic icebergs [1978, eng] **F-20705**

Effect of climatic warming on the West Antarctic ice sheet [1979, eng] **F-21404**

DISTRIBUTION

Characteristics of antarctic multi-year sea ice [1977, eng] **F-19405**

Results of iceberg observations [1968, eng] **F-20333**

Distribution, movement and melt rates of antarctic icebergs [1978, eng] **F-20462**

Ice conditions in the Leningradskaya Station area [1978, rus] **F-20763**

DRIFTING

Effect of glacial ice melting on the Antarctic Surface Water [1979, eng] **E-21657**

Ice-rafted sediments in the Arctic and Antarctic [1976, eng] **F-20402**

Eleven year chronicle of one of the world's most gigantic icebergs [1978, eng] **F-20881**

Study of the east-west antarctic current by means of icebergs tracked by the EOLE satellite [1977, eng] **J-20026**

EXPLOITATION

Obtaining fresh water from icebergs [1977, rus] **F-20158**

Polar glaciology [1976, spa] **F-20193**

Is there an iceberg in your future [1977, eng] **F-20300**

Icebergs for use as freshwater [1978, eng] F-20403
Iceberg utilization [1978, eng] F-20448
Challenges of iceberg utilization [1978, eng] F-20449
Problems associated with iceberg utilization [1978, eng] F-20450
Icebergs - a natural resource [1978, eng] F-20451
Global role of antarctic iceberg exploitation [1978, eng] F-20452
Critical look at the iceberg utilization project [1978, eng] F-20453
Some elements of iceberg technology [1978, eng] F-20454
High efficiency iceberg propulsion systems [1978, eng] F-20468
Osmotic propulsion of icebergs [1978, eng] F-20469
Environmental factors along an iceberg tow route in the Indian Ocean [1978, eng] F-20471
Iceberg protection by foamed insulation [1978, eng] F-20472
Use of floating solar collectors in processing iceberg water [1978, eng] F-20473
Role of iceberg utilization research and development in enhancing the transfer of technology in Saudi Arabia [1978, eng] F-20474
Making decisions on iceberg utilization [1978, eng] F-20475
Yields and energetics in moving unprotected icebergs to southern continents [1978, eng] F-20476
Pilot program for exporting antarctic icebergs [1978, eng] F-20477
Role of iceberg utilization in solving the Saudi Arabian water problems [1978, eng] F-20478
Delivery of icebergs to Saudi Arabia—an assessment [1978, eng] F-20479
International law problems of acquisition and transportation of antarctic icebergs [1978, eng] F-20480
Some international implications of iceberg transfer [1978, eng] F-20481
Legal/political aspects of antarctic iceberg utilization [1978, eng] F-20482
Aspects of transporting icebergs from Antarctica to the United States [1978, eng] F-20483
Cloud seeding and potential weather impacts [1978, eng] F-20484
Ecological aspects of iceberg transport from antarctic waters [1978, eng] F-20485
Energy and fresh water production from icebergs [1978, eng] F-20486
Icebergs as a heat sink for power generation [1978, eng] F-20487
Locating icebergs + remote sensing [1978, eng] F-20488
Weather modification and environmental and ecological impact (caused by towed icebergs) [1978, eng] F-20489
Energy conservation, water quality, and legal aspects of iceberg utilization [1978, eng] F-20490
Australia may benefit as iceberg idea is refloated [1978, eng] F-20711
Icebergs to Arabia [1978, eng] F-20713
Numerical modelling of iceberg towing for water supplies—a case study [1978, eng] F-21337
Water supply and weather modifications through the use of transported icebergs from the Antarctic [1977, eng] G-20904

MECHANICAL PROPERTIES
Some elements of iceberg technology [1978, eng] F-20454
Some mechanisms for the calving of icebergs [1978, eng] F-20459
Iceberg cleaving and fracture mechanics [1978, eng] F-20460

MORPHOLOGY
Underwater inspection of icebergs [1978, eng] F-20465
Using side-looking radar for studying ice undersurfaces [1978, rus] F-20616
Instruments for studying underwater portions of Southern Ocean icebergs [1978, rus] F-20654
Radar reflections of submerged parts of icebergs [1979, eng] F-21263

PHYSICAL PROPERTIES
Some elements of iceberg technology [1978, eng] F-20454
Hydrodynamics of icebergs in transit [1978, eng] F-20467

SOUNDINGS
Iceberg thickness profiling using an impulse radar [1977, eng] F-19684
Remote sensing of iceberg thickness [1978, eng] F-20455

STRUCTURE
Iceberg thickness and crack detection [1978, eng] F-20457

THAWING
Effect of glacial ice melting on the Antarctic Surface Water [1979, eng] E-21657

Distribution, movement and melt rates of antarctic icebergs [1978, eng] F-20462
Iceberg protection by foamed insulation [1978, eng] F-20472
Use of floating solar collectors in processing iceberg water [1978, eng] F-20473
Icebergs as a heat sink for power generation [1978, eng] F-20487
Melting of antarctic icebergs [1978, eng] F-20705
Eleven year chronicle of one of the world's most gigantic icebergs [1978, eng] F-20881
On melting icebergs [1978, eng] F-20907
Numerical modelling of iceberg towing for water supplies—a case study [1978, eng] F-21337

THICKNESS
Iceberg thickness profiling using an impulse radar [1977, eng] F-19684
Iceberg thickness profiling [1978, eng] F-19755
Discharge of ice across the Sôya Coast [1978, eng] F-19837
Remote sensing of iceberg thickness [1978, eng] F-20455
Iceberg thickness and crack detection [1978, eng] F-20457

VARIATIONS
Numerical modelling of iceberg towing for water supplies—a case study [1978, eng] F-21337

VOLUME
Eleven year chronicle of one of the world's most gigantic icebergs [1978, eng] F-20881

Icebreakers
Abortive attempt at wintering [1978, jap] A-20434
Accident-plagued 1974-75 antarctic campaign [1975, spa] D-20254
Moving ice [1978, eng] F-21078
Ship operations, *Deep Freeze* '77 [1977, eng] G-19734
Operational capability of a polar research ship [1978, eng] G-19754
Navigation of *Soya* in the Antarctic Ocean [1978, jap] G-19766
Fuji's maiden cruise [1978, jap] G-19772
Polar Star—the second time around [1978, eng] G-20856
Icebreaker propulsion systems feasibility study [1967, eng] G-21201
Polar icebreaker preliminary structural design and special studies [1968, eng] G-21206
Polar transportation requirements study report. Volume 1 [1968, eng] G-21211
Ship operations, *Deep Freeze* 78 [1978, eng] G-21645
See also: Ice breaking

Insecta
See: Arthropoda-Insecta

Institutions
See: Research institutions

Instruments
See under: Atmosphere; Biology; Cartography; Geology; Geomagnetism; Ice; Medical sciences; Meteorology; Oceanography; Snow; Terrestrial physics. *See also:* Electronic apparatus; Radiosondes

International cooperation
Emergence of Antarctica [1978, eng] A-20199
International scientific research programs [1978, rus] A-21687
BIOMASS [1978, eng] B-21082
French accomplishments in glaciology, 1973 [1973, fre] F-20419
Challenges of iceberg utilization [1978, eng] F-20449
International law problems of acquisition and transportation of antarctic icebergs [1978, eng] F-20480
Mission to the Japanese antarctic station, Showa [1976, fre] K-20350
[Press briefing] [1977, eng] M-19581
[Press briefing] [1977, eng] M-19583
Possibilities of internationalization of Antarctica [1977, ger] M-20288
International cooperation under the Antarctic Treaty [1978, eng] M-20789
Antarctica: geopolitical football [1977, eng] M-20832
Trends and prospects for regimes for living and mineral resources in the Antarctic [1979, eng] M-21369
Recommended approach to the antarctic resource problem [1978, eng] M-21473

International cooperation *(cont.)*
Antarctic system and the utilization of resources [1978, eng] **M-21474**
The international community and Antarctica [1978, eng] **M-21475**
Criminal jurisdiction in Antarctica [1978, eng] **M-21476**
See also: Research programs/*International*

Interpersonal relationships
Summary of psychological effects of antarctic service [1978, eng] **H-20876**
Relationship between cohesiveness and effectiveness in small isolated groups: a field study [1974, eng] **H-21072**
Group homogeneity, compatibility and accomplishment [1967, eng] **H-21074**
Group compatibility in restricted environments [1967, eng] **H-21119**
Effect of extreme antarctic conditions on the psychosomatic state of personnel [1977, rus] **H-21145**
Individual behavior in confined or isolated groups [1970, eng] **H-21198**
OIC's rating of individual performance [1967, eng] **H-21245**
Performance ratings using an interpersonal check list [1967, eng] **H-21246**

Inventories
Food and logistics material for the polar traverse [1975, eng] **G-20990**

Ionization
See under: Ionosphere

Ionosphere
Radio communications for travellers on the Arctic Ocean [1978, eng] **G-20790**
Ionospheric data for Showa, Aug. 1961-Jan. 1962 [1969, eng] **K-19384**
Ionospheric data for Showa, July-Dec. 1971 [1972, eng] **K-19385**
Ionospheric data for Showa, July-Dec. 1972 [1973, eng] **K-19386**
Ionospheric data for Showa, July-Dec. 1973 [1974, eng] **K-19387**
Ionospheric data for Showa, Jan.-June 1974 [1975, eng] **K-19388**
Ionospheric data for Showa, Jan.-June 1975 [1976, eng] **K-19389**
Ionospheric data for Showa, Feb.-July 1966 [1969, eng] **K-19392**
Radio wave Doppler studies of the antarctic ionosphere [1977, eng] **K-19478**
Importance of the Antarctic in atmospheric sciences [1977, eng] **K-19480**
Ionospheric origin for Pi 1 micropulsations [1976, eng] **K-19575**
Polarization studies of Siple-Roberval Pc 1 micropulsations [1977, eng] **K-19714**
Simultaneous occurrence of short period ionospheric and magnetic oscillations in Antarctica [1977, eng] **K-19716**
Radio scintillation studies [1977, eng] **K-19723**
Ionospheric data for Showa, Aug. 1960-Jan. 1961 [1968, eng] **K-19961**
Ionospheric data for Showa, Aug. 1967-Jan. 1968 [1971, eng] **K-19962**
Ionospheric data for Showa, Aug. 1968-Jan. 1969 [1970, eng] **K-19963**
Ionospheric data for Showa, Feb.-July 1969 [1969, eng] **K-19964**
Ionospheric data for Showa, Aug. 1969-Jan. 1970 [1970, eng] **K-19965**
Ionospheric data for Showa, Feb. 1970-Jan. 1971 [1972, eng] **K-19966**
Ionospheric data for Showa, Jan.-June 1971 [1972, eng] **K-19967**
Ionospheric data for Showa, Jan.-June 1973 [1973, eng] **K-19968**
Ionospheric data for Showa, July-Dec. 1974 [1975, eng] **K-19969**
Ionospheric data for Showa, July-Dec. 1975 [1976, eng] **K-19970**
Ionospheric data for Showa, Jan.-June 1976 [1976, eng] **K-19971**
Monthly bulletin of ionospheric characteristics observed at SANAE Base, Antarctica [1967, eng] **K-20225**
Ionosphere-magnetosphere coupling [1975, spa] **K-20257**
Active very low frequency experiments on the magnetosphere from Siple Station, Antarctica [1977, eng] **K-20281**
Upper atmosphere research in Antarctica [1978, eng] **K-20291**
Controlled wave-particle interaction experiments [1978, eng] **K-20295**
Studies of geomagnetic pulsations [1978, eng] **K-20296**
Early history of upper atmospheric physics research in Antarctica [1978, eng] **K-20299**
High latitude supplement to the *URSI Handbook on Ionogram Interpretation and Reduction* [1975, eng] **K-20378**
Rocket observation of VLF emission spectra [1978, eng] **K-20953**
Rocket observations of wave phenomena in the ionosphere [1978, eng] **K-20954**
Micropulsations observed by whistler-mode transmissions [1978, eng] **K-20979**
Ionosphere [1972, eng] **K-21236**
Observations carried out in the field at Kerguelen Station during the ARAKS experiment [1978, eng] **K-21426**
Recent progress in observational studies of electric fields and currents in the polar ionosphere: a review [1979, jap] **K-21679**
Correlation between cusp field-aligned currents and interplanetary magnetic field [1979, jap] **K-21680**
Results of studying electromagnetic phenomena in the Antarctic [1978, rus] **K-21688**
Advantages of the Antarctic for ionospheric research [1977, eng] **K-21716**
Results and prospects of Soviet geophysical research in the Antarctic [1978, rus] **L-20675**

ABSORPTION
American ham operator at Mirnyy [1979, eng] **G-21711**
Riometer records of 30 MHz cosmic noise at Syowa Station Antarctica in 1976 [1977, eng] **K-19361**
Riometer studies at South Georgia [1976, eng] **K-19546**
Magnetic fluctuations and ionosphere conductivity changes measured at Siple Station [1977, eng] **K-19715**
Magnetospheric dynamics programs at Vostok Station [1977, eng] **K-19718**
High-latitude ionospheric absorption [1977, eng] **K-19719**
Sudden commencement absorption events at the South Pole [1978, eng] **K-20064**
Optical diagnostics of the August 1972 PCA event [1976, eng] **K-20509**
ULF and ionospheric conductivity variations during substorms [1978, eng] **K-20531**
Poleward expansion of ionospheric absorption regions [1978, eng] **K-20544**
F-lacuna events [1978, eng] **K-20629**
Initial results of rocket studies of charged particle streams in Antarctica [1978, rus] **K-20766**
Auroral absorption at Molodezhnaya Station in 1973 [1978, rus] **K-20769**
Results of field intensity measurements of short-wave exact time radio stations at Molodezhnaya [1978, rus] **K-20771**
Relationship between ionospheric radiowave absorption and magnetic disturbances in Antarctica [1978, rus] **K-21459**
High time resolution riometer studies of magnetospheric electron precipitation [1978, eng] **K-21623**
Precipitating electrons observed from balloons [1978, eng] **K-21624**
Correlative Pc 1 micropulsations and particle precipitation [1978, eng] **K-21625**
High-latitude ionospheric absorption [1978, eng] **K-21632**
Polar cap geomagnetic variations studies [1978, eng] **K-21633**
Soviet-American geophysical research at Vostok Station [1978, rus] **L-21460**

CURRENT SYSTEMS
Geomagnetic Sq field at successive universal times [1978, eng] **K-20235**
Cusp field-aligned currents and the IMF [1978, eng] **K-21058**
Auroral infrasonic waves and the auroral electrojet [1979, eng] **K-21283**
Geomagnetic L-variation at SANAE, Antarctica [1978, eng] **L-21342**

D REGION
Riometer studies at South Georgia [1976, eng] **K-19546**

DIURNAL VARIATIONS
Preliminary results of oblique-incidence sounding of the ionosphere on a Moscow-Antarctica path [1978, rus] **K-20767**
Preliminary results of studies of multi-trajectory signals on the Moscow-Molodezhnaya path [1978, rus] **K-20768**
Relationship between ionospheric radiowave absorption and magnetic disturbances in Antarctica [1978, rus] **K-21459**

E REGION
Dual coherent auroral radar observations from Siple Station, Antarctica [1977, eng] **K-19713**

Vertical ionospheric soundings at Molodezhnaya Station [1977, rus] K-19889
On high-latitude CNA, G-lacuna and SEC [1978, eng] K-20099
Periodicity in Es occurrence probability at the polar caps [1977, rus] K-20167
Preliminary results of studies of multi-trajectory signals on the Moscow-Molodezhnaya path [1978, rus] K-20768
Phenomenon of sporadic E-layer conjugation [1976, eng] K-21008
Polarization characteristics and phase differences of Pi2 pulsations at conjugate stations [1978, eng] K-21018

ELECTRON DENSITY
Electron precipitation associated with very low frequency chorus and thunderstorm electric fields [1977, eng] K-19712
Depressions in midlatitude F-region under relatively quiet geomagnetic conditions [1977, eng] K-19803
High to low latitude variations in electron content [1977, eng] K-19872
European and American protonospheric electron content measurement [1978, eng] K-19909
Satellite observations of polar electrons [1978, eng] K-19912
Intersection of geomagnetic force lines with the interplanetary magnetic field in the evening portion of the south polar cap [1977, rus] K-20170
Energetic particle precipitation from the magnetosphere [1978, eng] K-20293
Very low frequency radio waves in the magnetosphere [1978, eng] K-20294
Origin of annual and subannual periodicities in F region ionization [1978, eng] K-20530
Electron density in the plasmasphere [1978, eng] K-20534
Interaction between particles and VLF waves [1978, eng] K-20535
On the relationship of 3mHz (Pc5) electric, magnetic, and particle variations [1978, eng] K-20623
Preliminary results of oblique-incidence sounding of the ionosphere on a Moscow-Antarctica path [1978, rus] K-20767
Proceedings of the Second Symposium on Rocket Experiments in Antarctica [1978, eng] K-20947
Rocket measurements of electron density and temperature profiles [1978, eng] K-20948
Auroral-zone energetic electrons at Showa Station [1978, eng] K-20949
Precipitating electrons observed by sounding rockets [1978, eng] K-20950
Rocket observation of keV electron fluxes at Syowa Station [1978, eng] K-20951
High-latitude ionospheric inhomogeneities according to measurements on Kosmos 348 [1976, eng] K-21168
Low-energy electrons in the south polar cusp [1978, eng] K-21353
Method of locating the Pc1 source and hot plasma parameters in the generation region [1979, eng] K-21381
High time resolution riometer studies of magnetospheric electron precipitation [1978, eng] K-21623
Precipitating electrons observed from balloons [1978, eng] K-21624
Wave-induced particle precipitation effects at Siple Station [1978, eng] K-21628
Observation of precipitating electrons on board the S-310JA-2 [1979, jap] K-21675
Observations of auroral-zone precipitating electrons by antarctic rockets [1979, jap] K-21676

F REGION
Riometer studies at South Georgia [1976, eng] K-19546
Depressions in midlatitude F-region under relatively quiet geomagnetic conditions [1977, eng] K-19803
High to low latitude variations in electron content [1977, eng] K-19872
Vertical ionospheric soundings at Molodezhnaya Station [1977, rus] K-19889
Observations of the ionosphere over the South Atlantic Ocean [1976, eng] K-19898
On high-latitude CNA, G-lacuna and SEC [1978, eng] K-20099
Antarctic ionospheric research [1978, eng] K-20298
Relationship between polar magnetic substorms, ionospheric height rises and the occurrence of spread-F [1978, eng] K-20408
Origin of annual and subannual periodicities in F region ionization [1978, eng] K-20530
F-lacuna events [1978, eng] K-20629
Results of field intensity measurements of short-wave exact time radio stations at Molodezhnaya [1978, rus] K-20771
Whistler observations of substorm electric fields in the nightside plasmasphere [1978, eng] K-21059

IONIZATION
Initial results of rocket studies of charged particle streams in Antarctica [1978, rus] K-20766
Results of field intensity measurements of short-wave exact time radio stations at Molodezhnaya [1978, rus] K-20771

IRREGULARITIES
Perturbation of upper ionospheric profile associated with the magnetospheric cleft in local summer in Antarctica [1977, fre] K-19335
High-latitude ionospheric inhomogeneities according to measurements on Kosmos 348 [1976, eng] K-21168

STORMS
Structure of the bursts of auroral protons [1976, rus] K-19776
Low-energy electrons in the south polar cusp [1978, eng] K-21353

Isolation effects
Physiological adaptation and health of an expedition in Antarctica, with comment on behavioural adaptation [1977, eng] H-19266
Adaptation of groups to antarctic isolation [1977, eng] H-19345
Effect of isolation from environmental allergens on the allergic state [1977, eng] H-19449
Respiratory virus transmission at McMurdo Station [1977, eng] H-19591
Lack of increased susceptibility to colds at McMurdo [1977, eng] H-19592
Colds and immunity at McMurdo Station and Scott Base [1977, eng] H-19593
Information requirements of antarctic personnel [1977, rus] H-19891
Aspects of infection in isolated communities [1977, eng] H-20245
Electroencephalography, isolation and hypnotic capability at Scott Base [1978, eng] H-20877
Influence of isolation on body and skin temperature [1975, eng] H-20986
Social and health aspects of human adaptation in polar regions [1978, rus] H-21033
Relationship between cohesiveness and effectiveness in small isolated groups: a field study [1974, eng] H-21072
Group homogeneity, compatibility and accomplishment [1967, eng] H-21074
Group compatibility in restricted environments [1967, eng] H-21119
Stability of job attitudes in long-term isolated groups [1970, eng] H-21197
Individual behavior in confined or isolated groups [1970, eng] H-21198
See also: Psychology

Isostasy
Crust and upper mantle dynamics in regions of continental glaciation [1969, rus] L-19855

Journalism
Newspaper articles on the JARE with the *Kainan Maru* during her calls at Wellington and Sydney in 1910-1912 [1977, jap] A-19306
1974 visit to the new South Pole Station [1976, jap] A-19426
Media representatives in Antarctica [1977, eng] A-19736
Antarctic sightseeing flight by Air New Zealand [1978, jap] A-19775
Life at the bottom: the people of Antarctica [1977, eng] A-20018
An expedition newspaper, *Antarctic News* [1978, jap] A-20437
The future of Antarctica [1977, eng] M-19580
Argentine plans to invade Falklands foiled [1975, eng] M-21273

Krill
See: Arthropoda-Crustacea

Laws and regulations
International moratorium on whales [1976, spa] A-20195
Whale controversy: United States vs. Japan [1974, eng] B-20132
In for the krill [1978, eng] B-20525
Conservation of antarctic seals and birds [1978, eng] B-20794
Iceberg utilization [1978, eng] F-20448
International law problems of acquisition and transportation of antarctic icebergs [1978, eng] F-20480

Laws and regulations *(cont.)*
Some international implications of iceberg transfer [1978, eng] **F-20481**
Legal/political aspects of antarctic iceberg utilization [1978, eng] **F-20482**
Energy conservation, water quality, and legal aspects of iceberg utilization [1978, eng] **F-20490**
Modelling the exclusive economic zone enforcement problem [1978, eng] **J-21285**
Status of Antarctica in the light of international law [1977, eng] **M-19381**
Law of nations in polar regions [1974, ita] **M-20004**
Possibilities of internationalization of Antarctica [1977, ger] **M-20288**
Congressional hearings on whale conservation [1976, eng] **M-20379**
Congressional hearings on Antarctic Conservation Act [1978, eng] **M-20380**
Congressional hearings on criminal acts in Antarctica [1977, eng] **M-20381**
Antarctica, the Southern Ocean, and the law of the sea [1977, eng] **M-21065**
Criminal jurisdiction in Antarctica [1978, eng] **M-21476**

Libraries
List of Royal Geographic Society archives on Antarctica [1976, eng] **A-20006**
Documents retrieval system at National Institute of Polar Research [1978, eng] **A-20089**

Lichens
See: Thallophyta-Lichens

Light and darkness effects
Circadian rhythm in human blood circulation in Antarctica [1978, rus] **H-21039**
Oxygen consumption tests for antarctic wintering over party [1978, ger] **H-21241**

Limnology
University of Waikato 1975 report [1975, eng] **A-20212**
Research in perennial ice [1975, ger] **A-20289**
Limnological survey of the Ablation Point area, Alexander Island, Antarctica [1977, eng] **B-19472**
Limnology of fresh water lakes at Anvers Island, Antarctica [1971, eng] **B-19490**
Ecosystem studies and mathematical model for Lake Bonney [1977, eng] **B-19610**
Environmental impact in Antarctica [1978, eng] **B-19978**
Environmental appraisal for the Dry Valley Drilling Project phases III, IV, V (1973-74, 1974-75, 1975-76) [1978, eng] **B-19980**
Summary of environmental monitoring and impact assessment of the DVDP [1978, eng] **B-19982**
Potential impact on Lake Bonney of activities associated with modeling freshwater antarctic ecosystems [1978, eng] **B-19983**
Aquatic primary production in the Antarctic [1977, eng] **B-20274**
Saline lake algae in Antarctica [1978, jap] **B-20436**
Nutrient fluxes in Lake Bonney—a meromictic antarctic lake [1977, eng] **B-20892**
Freshwater algae from Crozet and Kerguelen Islands (excluding diatoms). 2. Examination of specimens taken in 1973 and 1974 [1977, fre] **B-20930**
Microbial life at low temperatures: ecological aspects [1978, eng] **B-21169**
Photosynthetic bacteria from Lake Vanda (Antarctica) [1978, eng] **B-21240**
Biology of an antarctic aquatic moss community [1978, eng] **B-21289**
Primary productivity of a hypersaline antarctic lake [1978, eng] **B-21350**
Occurrence of *Paralabidocera antarctica* (I.C. Thompson) (Copepoda: Calanoida: Acartiidae) in an antarctic saline lake [1978, eng] **B-21351**
Ecosystem comparisons of oasis lakes and soils [1978, eng] **B-21605**
Geochemical features of antarctic lakes [1977, jap] **E-19292**
Trace metals in Langhovde [1977, jap] **E-19294**
Diatom flora and environmental factors in some freshwater ponds of East Ongul Island [1977, jap] **E-19296**
Unusual drainage system in an antarctic valley [1976, eng] **E-19551**
Plankton and bottom deposits in a Skarvnes Foreland lake [1975, jap] **E-19585**
Freshwater lakes in Pleistocene McMurdo Sound [1977, eng] **E-19666**
Study of strontium isotopes in lakes and surficial deposits of the ice-free valleys, Southern Victoria Land, Antarctica [1978, eng] **E-20164**
Study on thermosolutal convection in saline lakes [1976, eng] **E-20227**
Hydrology-glaciology programme in Antarctica [1978, eng] **E-20309**
Water chemistry and sediments near McMurdo Sound [1978, eng] **E-20370**
Analysis of thermosolutal phenomena observed in McMurdo saline lakes [1978, eng] **E-20376**
Lake Vanda (Antarctica) revisited [1977, eng] **E-20754**
Dating of geochemical events in Lake Bonney, Antarctica, and their relation to glacial and climate changes [1977, eng] **E-20757**
Antarctic saline lakes [1979, eng] **E-21126**
Development and use of a mathematical model for an antarctic lake [1978, eng] **E-21238**
View of the formation of saline waters in the dry valleys [1978, eng] **F-20374**
Identification and biological characteristics of strains of psychrophilic bacteria isolated in diarrhea of polar workers and from antarctic lake water [1978, eng] **H-21427**
Polar dry deserts [1974, eng] **I-20596**

Locomotion
See under: Aves-Sphenisciformes

Logistics
Snow [1978, eng] **A-19862**
Man's impact on antarctic birds [1978, eng] **B-19987**
Harvesting of krill [1977, eng] **B-20002**
Summary of field activities of the Dry Valley Drilling Project 1972-1973 and 1973-1974 [1978, eng] **E-19981**
Nansen Drift Station Project—remote sea-ice runway construction [1978, eng] **F-19991**
Icebergs for use as freshwater [1978, eng] **F-20403**
Improvement of scientific systems aboard ARA *Islas Orcadas* [1977, eng] **G-19727**
Research-configured LC-130R airplane [1977, eng] **G-19729**
Contractor support [1977, eng] **G-19730**
Air operations, *Deep Freeze* '77 [1977, eng] **G-19731**
Public works, *Deep Freeze* '77 [1977, eng] **G-19732**
Ship operations, *Deep Freeze* '77 [1977, eng] **G-19734**
Deep Freeze 1978 cruise report [1978, eng] **G-19865**
Cost of U.S. antarctic research [1971, eng] **G-19960**
South Pole approach [1978, eng] **G-20061**
Polar logistic support: the United States Navy [1978, eng] **G-20208**
Report of Antarctic Development Squadron Six operations [1978, eng] **G-20415**
Report of Operation *Deep Freeze* 78, 1977-1978 [1978, eng] **G-20416**
Logistics and buoys in the first GARP global experiment [1978, eng] **G-20417**
Antarctic operations manual [1978, eng] **G-20778**
Antarctic field manual [1978, eng] **G-20779**
Operation *Deep Freeze:* Operation order No.1-79 [1978, eng] **G-20783**
Polar icebreaker cruise report, Operation *Deep Freeze* '79 [1979, eng] **G-21256**
Deep Freeze 1979 Cruise Report [1979, eng] **G-21488**
Ship operations, *Deep Freeze* 78 [1978, eng] **G-21645**
Contractor support [1978, eng] **G-21646**

Low temperature effects
Radio communications for travellers on the Arctic Ocean [1978, eng] **G-20790**
Portland cement concrete for Antarctica [1975, eng] **G-20802**
Concreting in Antarctica [1978, eng] **G-20875**
ON EQUIPMENT
Caulking compounds for application at low temperatures [1975, eng] **G-20816**

ON MAN
Clothing man in a cold environment [1978, eng] G-20318
Food and logistics material for the polar traverse [1975, eng] G-20990
Physiological adaptation and health of an expedition in Antarctica, with comment on behavioural adaptation [1977, eng] H-19266
Energy balance in man [1977, eng] H-20143
Medical research in the Antarctic, particularly in the French austral and antarctic territories [1978, fre] H-20232
Working Group on Human Biology and Medicine [1978, eng] H-20325
Antarctic physiology [1978, jap] H-20435
Time limit for outdoor activity in Antarctica as a function of wind speed and air temperature [1978, rus] H-21046
Assessing thermoregulation in wintering personnel at a coastal antarctic station [1977, rus] H-21144
Changing cold acclimatization patterns of men living in Antarctica [1978, eng] H-21214
Wind chill index as applied to three Chilean antarctic bases [1972, spa] I-19794

Luminescence
See under: Ice

Magnetic activity
See: Geomagnetic disturbances/Activity indices

Magnetic bays
See: Geomagnetic disturbances/Bays and pulsations

Magnetic field (in space)
Magnetic quiet-day solar daily variations in magnetically conjugate regions [1977, eng] K-19571
Magnetic fluctuations and ionosphere conductivity changes measured at Siple Station [1977, eng] K-19715
Signatures of magnetic field pulsation activity [1977, eng] K-19717
Sudden commencement absorption events at the South Pole [1978, eng] K-20064
Ionosphere-magnetosphere coupling [1975, spa] K-20257
Recent progress in antarctic auroral studies [1978, eng] K-20297
Satellite observations of magnetic disturbances in the polar regions [1978, eng] K-20500
F-lacuna events [1978, eng] K-20629
Interplanetary magnetic field and polar cusps [1976, eng] K-20691
Cusp field-aligned currents and the IMF [1978, eng] K-21058
Comparison of inferred and observed interplanetary magnetic field polarities, 1970-1972 [1975, eng] K-21071
SD current direction changes in the vicinity of geomagnetic poles [1971, eng] K-21088
Penetration of solar flare protons into the polar caps [1975, eng] K-21161
Electric field of polar caps under the assumption that the magnetopause is an anisotopic rotational discontinuity [1975, eng] K-21163
Magnetic activity and subauroral ELF-VLF chorus [1975, eng] K-21164
Polar cap electric field structures with a northward interplanetary magnetic field [1979, eng] K-21321
Effect of the total magnetic field of the sun on cosmic-ray modulation in the mid-latitude stratosphere [1978, eng] K-21349
Atmospheric electricity and solar magnetism at Vostok [1978, rus] K-21461
Correlation between cusp field-aligned currents and interplanetary magnetic field [1979, jap] K-21680
Catalog of polarity determinations for sectors of the interplanetary magnetic field from 1975 to 1976 [1978, rus] K-21709
See also: Geomagnetic field; Magnetosphere

Magnetic poles
See under: Geomagnetic field

Magnetic storms
See: Geomagnetic disturbances/Storms

Magnetism
Proceedings of the second Symposium on Yamato Meteorites [1978, eng] E-19916
Supplementary notes on the magnetic classification of stony meteorites [1978, eng] E-19934
Magnetic properties of an iron meteorite and a pallasite [1978, eng] E-19935
Revised reconstruction of the southern continents [1978, eng] E-20701
Nature of the oceanic crust [1976, eng] E-21330
Basement morphology and rift geometry near the former junction of India, Australia, and Antarctica [1978, eng] L-20062
See also: Paleomagnetism

ROCK
Ground magnetic studies of volcanic rocks in the Taylor and Wright Valleys region [1977, eng] E-19659
Volcanic rocks of the Chatham Islands [1977, eng] E-19805
Model for ocean-floor metamorphism, seismic layering and magnetism [1976, eng] E-21328
Paleomagnetism of Ordovician lamprophyres from Taylor Valley [1977, eng] L-20266
Limitations of ophiolite complexes [1978, eng] L-20624
Magnetic anomalies across Campbell Plateau, New Zealand [1978, eng] L-21128

Magnetohydrodynamic waves
See: Hydromagnetic waves

Magnetosphere
Spring meeting 1977, abstracts [1977, eng] A-21360
Fall meeting 1978, abstracts [1978, eng] A-21365
Perturbation of upper ionospheric profile associated with the magnetospheric cleft in local summer in Antarctica [1977, fre] K-19335
Diurnal latitude variation of the location of the dayside cusp [1977, eng] K-19371
Importance of the Antarctic in atmospheric sciences [1977, eng] K-19480
Proton distribution in polar caps, Sep. 7, 1973 [1976, rus] K-19496
Riometer studies at South Georgia [1976, eng] K-19546
Magnetic quiet-day solar daily variations in magnetically conjugate regions [1977, eng] K-19571
Experiment communication and data transmission through the ATS-3 synchronous satellite [1977, eng] K-19710
Siple/Roberval VLF transmitting experiments [1977, eng] K-19711
Electron precipitation associated with very low frequency chorus and thunderstorm electric fields [1977, eng] K-19712
Polarization studies of Siple-Roberval Pc 1 micropulsations [1977, eng] K-19714
Magnetic fluctuations and ionosphere conductivity changes measured at Siple Station [1977, eng] K-19715
Magnetospheric dynamics programs at Vostok Station [1977, eng] K-19718
Aurorae and closed magnetic field lines [1977, eng] K-19804
European and American protonospheric electron content measurement [1978, eng] K-19909
Whistler precursors: a possible catalytic role of power line radiation [1977, eng] K-19911
Satellite observations of polar electrons [1978, eng] K-19912
Auroral deformation and anomalous viscosity [1978, eng] K-20063
Formation of whistler ducts [1978, eng] K-20100
Observations of the entry of solar protons into the magnetosphere by use of riometers [1974, eng] K-20136
Outlying plasmasphere structure detected by whistlers [1976, eng] K-20215
Ionosphere-magnetosphere coupling [1975, spa] K-20257
Active very low frequency experiments on the magnetosphere from Siple Station, Antarctica [1977, eng] K-20281
Very low frequency electromagnetic phenomena: whistlers and micropulsations [1977, eng] K-20282
Upper atmosphere research in Antarctica [1978, eng] K-20291
Cosmic rays [1978, eng] K-20292
Energetic particle precipitation from the magnetosphere [1978, eng] K-20293
Very low frequency radio waves in the magnetosphere [1978, eng] K-20294
Controlled wave-particle interaction experiments [1978, eng] K-20295
Studies of geomagnetic pulsations [1978, eng] K-20296
Recent progress in antarctic auroral studies [1978, eng] K-20297
Antarctic ionospheric research [1978, eng] K-20298
Satellite observations of magnetic disturbances in the polar regions [1978, eng] K-20500

Magnetosphere *(cont.)*
Dynamo origin of electric fields in the plasmasphere [1978, eng] **K-20501**
Whistlers and VLF noises propagating just outside the plasmapause [1978, eng] **K-20503**
Magnetospheric radiation from power lines [1975, eng] **K-20507**
Power line radiation in the magnetosphere [1977, eng] **K-20510**
ULF and ionospheric conductivity variations during substorms [1978, eng] **K-20531**
Electron density in the plasmasphere [1978, eng] **K-20534**
Interaction between particles and VLF waves [1978, eng] **K-20535**
Poleward expansion of ionospheric absorption regions [1978, eng] **K-20544**
On the relationship of 3mHz (Pc5) electric, magnetic, and particle variations [1978, eng] **K-20623**
Rocket measurements of electron density and temperature profiles [1978, eng] **K-20948**
Micropulsations observed by whistler-mode transmissions [1978, eng] **K-20979**
Turbulence effects in the cyclotron resonance of monochromatic whistlers [1978, eng] **K-20996**
Transmitter simulation of power line radiation effects in the magnetosphere [1978, eng] **K-20997**
Magnetospheric effects of power line radiation [1978, eng] **K-21001**
Cusp field-aligned currents and the IMF [1978, eng] **K-21058**
PCA variations during shock-wave proton precipitation July 24-25, 1970 [1977, rus] **K-21137**
Penetration of solar flare protons into the polar caps [1975, eng] **K-21161**
Electric field of polar caps under the assumption that the magnetopause is an anisotopic rotational discontinuity [1975, eng] **K-21163**
Magnetic activity and subauroral ELF-VLF chorus [1975, eng] **K-21164**
Whistler-mode propagation studies using Navy VLF transmitters [1967, eng] **K-21192**
Stanford University VLF wave injection experiment on the ISEE-A spacecraft [1978, eng] **K-21234**
Auroral infrasonic waves and the auroral electrojet [1979, eng] **K-21283**
Polar cap electric field structures with a northward interplanetary magnetic field [1979, eng] **K-21321**
Method of locating the Pc1 source and hot plasma parameters in the generation region [1979, eng] **K-21381**
The ARAKS project [1978, eng] **K-21408**
Optical observations systems for the ARAKS experiment [1978, eng] **K-21420**
Observations carried out in the field at Kerguelen Station during the ARAKS experiment [1978, eng] **K-21426**
High time resolution riometer studies of magnetospheric electron precipitation [1978, eng] **K-21623**
Precipitating electrons observed from balloons [1978, eng] **K-21624**
Siple/Roberval magnetospheric wave-wave interaction experiments [1978, eng] **K-21626**
ISEE-1 satellite observations of signals from the Siple transmitter [1978, eng] **K-21627**
Power line radiation in the magnetosphere [1978, eng] **K-21629**
Jupiter: a new tool for magnetospheric research [1978, eng] **K-21630**
Energy flux in the solar wind and magnetospheric substorms [1978, eng] **K-21631**
Results of studying electromagnetic phenomena in the Antarctic [1978, rus] **K-21688**
Behavior of the plasma layer during breakup according to Mirnyy Station data [1978, rus] **K-21690**
See also: Geomagnetic field; Magnetic field (in space)

Mammalia
Space conference in Konstanz—Scientific results on fisheries [1973, ger] **A-20938**
Wildlife in the Falklands [1972, eng] **B-19446**
Ornithological research between Argentina and South Georgia [1977, eng] **B-19603**
Potential impact of harvesting zooplankton on the south circumpolar ecosystem [1978, eng] **B-19985**
Recent data on the fauna of Saint Paul and New Amsterdam Islands [1972, fre] **B-20894**
Goats on Auckland Islands [1978, eng] **B-20903**
Islands in the wind [1977, eng] **B-20915**
Early mammals in South America [1978, eng] **B-20918**
Report on Japanese Antarctic Whaling Expedition, 1974-1975 [1975, eng] **B-21015**
Report of guest on Antarctic Whaling Expedition No.30 [1976, eng] **B-21016**
Life in the deep south [1978, eng] **B-21080**
Ecological interactions in the Southern Ocean [1979, eng] **B-21225**
Zoological research in the Chilean Antarctic [1977, spa] **B-21293**
Exploring Macquarie Island. Part 1. Southern wildlife outpost [1978, eng] **B-21373**
Illustrated introduction to antarctic wildlife [1976, ita] **B-21382**
Cynodont reptiles from the Triassic of Antarctica [1977, eng] **E-19667**
Low sea levels, droughts and mammalian extinctions [1978, eng] **J-19942**

BREEDING CYCLES AND REPRODUCTION
Notes on the biology of the feral cat in the Kerguelen Islands [1976, fre] **B-19507**
House mice on Marion Island [1978, eng] **B-19952**
Reproduction of the rabbit, *Oryctolagus cuniculus* (L.), on Macquarie Island, Subantarctic [1978, eng] **B-21322**

ECOLOGY
Seals and whales of the Southern Ocean [1977, eng] **B-19475**
Notes on the biology of the feral cat in the Kerguelen Islands [1976, fre] **B-19507**
Influence of reindeer on the vegetation of South Georgia [1976, eng] **B-19560**
Ecology of the feral cat, *Felis catus* (L.), (Carnivora: Felidae) on Macquarie Island [1977, eng] **B-19750**
History and status of goats on the Auckland Islands [1977, eng] **B-19806**
Genetic variation in wild house mice [1978, eng] **B-19940**
House mice on Marion Island [1978, eng] **B-19952**
Reindeer in the Antarctic [1978, eng] **B-20714**
Animals of the antarctic islands [1973, eng] **B-20906**
Proto-lizards from the Triassic of Antarctica [1978, eng] **E-21512**
Snow dogs [1978, eng] **G-20715**

EVOLUTION
Genetic variation in wild house mice [1978, eng] **B-19940**
House mice on Marion Island [1978, eng] **B-19952**

EXPLOITATION
Marine living resources of the Southern Ocean [1978, eng] **B-21471**

MORPHOLOGY
Craniometric data on wild rabbits and cats of Hog Island [1976, fre] **B-19506**
Spectacled porpoise new to the subantarctic Pacific Ocean [1977, eng] **B-20216**

NUTRITION
Ecology of the feral cat, *Felis catus* (L.), (Carnivora: Felidae) on Macquarie Island [1977, eng] **B-19750**
Feral pigs on Auckland Island [1975, eng] **B-20837**
Note on the food of feral pigs *(Sus scrofa)* of Auckland Island [1976, eng] **B-20838**

PATHOLOGY
Notes on the biology of the feral cat in the Kerguelen Islands [1976, fre] **B-19507**

PHYSIOLOGY
Seals and whales of the Southern Ocean [1977, eng] **B-19475**

POPULATION
Seals and whales of the Southern Ocean [1977, eng] **B-19475**
Notes on the biology of the feral cat in the Kerguelen Islands [1976, fre] **B-19507**
Seabirds in antarctic marine ecosystems [1977, eng] **B-19604**
Problems in the conservation of polar marine mammals [1978, eng] **B-20205**
Feral pigs on Auckland Island [1975, eng] **B-20837**

TAXONOMY
New Triassic vertebrates from the Fremouw Formation [1978, eng] **E-21514**

Mammalia-Cetacea

Whale conservation: role of the International Whaling Commission [1977, eng] **B-19457**
Whale stocks—exploitation or moratorium [1977, eng] **B-19458**
Our friends in the sea and on the coasts [1973, fre] **B-19745**
Cocconeis diatom on the skin of Franciscana [1977, eng] **B-20094**
Conservation of southern ocean marine resources [1978, eng] **B-20223**
Penguins, whalers, and sealers: a voyage of discovery [1977, eng] **B-20497**
Japan progress report on whale research, June 1974 to May 1975 [1976, eng] **B-20666**
Soviet research on cetaceans during the seasons of 1974 and 1974-1975 [1976, eng] **B-20667**
Biology of the populations of large whales [1972, eng] **B-20844**
Dentinal layer formation in sperm whale teeth [1977, eng] **B-21028**
Whaling: past, present and future [1978, eng] **B-21173**
Congressional hearings on whale conservation [1976, eng] **M-20379**

BEHAVIOR

Sei whale behavior in the Southern Ocean [1973, rus] **B-20583**
Observations on diving behaviour of the sperm whale *Physeter catodon* [1977, eng] **B-21029**

BREEDING CYCLES AND REPRODUCTION

Reproduction of the minke whale in the south Indian Ocean [1976, eng] **B-20153**
Age at sexual maturity of the southern fin whale (Balaenoptera physalus) using annual layer counts in the ear plug [1972, eng] **B-20928**
Two cases of embryonic pathology in Indian Ocean whales [1977, rus] **B-21439**

EXPLOITATION

International moratorium on whales [1976, spa] **A-20195**
International whaling statistics, No.73 [1974, eng] **A-20353**
International whaling statistics, No.74 [1974, eng] **A-20354**
Whale controversy: United States vs. Japan [1974, eng] **B-20132**
Maximum sustainable yield in weight and related matters [1976, eng] **B-20658**
Japanese pelagic whaling and sighting in the Antarctic, 1974/75 [1976, eng] **B-20664**
Analysis of the stock-recruitment relation in antarctic fin whales *(Balaenoptera physalus)* [1973, eng] **B-20731**
Chemical composition of body parts of the antarctic sperm whale [1972, rus] **B-20809**
Thirtieth annual meeting of the International Whaling Commission, 1978 [1979, eng] **B-21719**

GEOGRAPHIC DISTRIBUTION

Reasons for incursions of female sperm whales into antarctic waters [1973, rus] **B-20581**
Effect of hydrological conditions in the Scotia Sea on aggregations of baleen whales [1973, rus] **B-20584**
Observations of marine mammals and other animals during the antarctic expedition of the USSR Academy of Sciences (1957-1958) [1970, eng] **B-21091**
Influence of hydrologic conditions on the distribution of baleen whales [1973, eng] **B-21199**

MARKING

Whale marking—progress report 1975 [1976, eng] **B-20656**
Whale marking: a short review [1977, eng] **B-21027**

MORPHOLOGY

Design and application of a coded format for recording observations of cetaceans at sea [1976, eng] **B-19897**
Sperm whales of the southeast Pacific. Part 3. Morphometry [1972, eng] **B-21267**
Morphology of minke whale pelvic bones [1978, eng] **B-21649**

NUTRITION

Food of Bryde's whales [1977, eng] **B-20093**
Beaks, nets and numbers [1977, eng] **B-20554**
Fish as sperm whale prey in Southern Ocean whaling zones [1973, rus] **B-20582**

PATHOLOGY

Disease and parasites in some antarctic whale stocks [1977, eng] **B-19594**
Two cases of embryonic pathology in Indian Ocean whales [1977, rus] **B-21439**

PHYSIOLOGY

Lipids of the antarctic sei whale *Balaenoptera borealis* [1978, eng] **B-20820**

POPULATION

Design and application of a coded format for recording observations of cetaceans at sea [1976, eng] **B-19897**
Assessment of antarctic minke whale stocks [1976, eng] **B-20152**
Attempt to standardize fishing efforts as applied to the stock assessment of the minke whale in the Antarctic Area IV [1976, eng] **B-20154**
Twenty-ninth annual meeting of the International Whaling Commission, 1977 [1978, eng] **B-20322**
Report and papers of the Scientific Committee of the Commission on Whaling [1975, eng] **B-20655**
Whale marking—progress report 1975 [1976, eng] **B-20656**
Some properties of the Schaefer model for baleen whale populations [1976, eng] **B-20657**
Maximum sustainable yield in weight and related matters [1976, eng] **B-20658**
Conversion of sustainable yield curve for whale population [1976, eng] **B-20659**
More flexible model for baleen whale populations [1976, eng] **B-20660**
Status of whale stocks off South Africa, 1974 [1976, eng] **B-20661**
Estimation of antarctic minke whale population [1976, eng] **B-20662**
Male sperm whale density trends in the southern hemisphere [1976, eng] **B-20663**
Japanese pelagic whaling and sighting in the Antarctic, 1974/75 [1976, eng] **B-20664**
Stock assessments of minke whales [1976, eng] **B-20665**
Analysis of the stock-recruitment relation in antarctic fin whales *(Balaenoptera physalus)* [1973, eng] **B-20731**
Population biology and the management of whales [1976, eng] **B-20834**
Whale marking: a short review [1977, eng] **B-21027**
Observations of marine mammals and other animals during the antarctic expedition of the USSR Academy of Sciences (1957-1958) [1970, eng] **B-21091**

Mammalia-Pinnipedia

Ross seal *Ommatophoca rossi* (Gray 1850), with notes from the results of surveys conducted in the King Haakon VII Sea, Jan./Feb. 1974-76 [1977, eng] **B-19461**
"Complete" seal carcass at Lake Miers, Miers Valley [1977, eng] **B-19599**
Our friends in the sea and on the coasts [1973, fre] **B-19745**
Conservation of southern ocean marine resources [1978, eng] **B-20223**
Seals of the Antarctic [1974, eng] **B-20576**
Penguin and seal carcasses on Black Island [1978, eng] **B-20592**
Conservation of antarctic seals and birds [1978, eng] **B-20794**
King George Island southern elephant seals [1978, rus] **B-21464**

BEHAVIOR

Antarctic wildlife sounds [1973, eng] **B-19365**
Diving behavior of fur seals and king penguins [1977, eng] **B-19596**
Colonial behavior of antarctic marine mammals in eastern McMurdo Sound [1977, eng] **B-19597**
Biota of the antarctic pack ice: R/V *Hero* cruise 76-6 [1977, eng] **B-19598**
Radiocarbon dating of seal skin and flippers [1968, eng] **B-19843**
Leopard seals at the Snares Islands, New Zealand [1978, eng] **B-20527**
Underwater vocalization and behavior of pinnipeds [1968, eng] **B-20867**
Cow-pup behaviour of the Weddell seal, *Leptonychotes weddelli* (Pinnipedia), in McMurdo Sound, Antarctica [1979, eng] **B-21442**
Colonial behavior of the Weddell seal in eastern McMurdo Sound [1978, eng] **B-21599**
Seals of the antarctic pack ice [1978, eng] **B-21600**

BLOOD AND CIRCULATION

Pulmonary metabolism during diving in the Weddell seal [1977, eng] **B-19326**

Mammalia-Pinnipedia

BLOOD AND CIRCULATION *(cont.)*
Blood chemistry of freely diving Weddell seals [1978, eng] **B-21598**
Unusual maternal-fetal blood glucose concentrations in Weddell seal [1979, eng] **B-21658**

BREEDING CYCLES AND REPRODUCTION
Growth of a fur seal population [1977, eng] **B-19474**
Biology of crabeater seals [1977, rus] **B-19888**
Breeding status of southern elephant seals at King George Island [1978, eng] **B-21597**
Seals of the antarctic pack ice [1978, eng] **B-21600**
Unusual maternal-fetal blood glucose concentrations in Weddell seal [1979, eng] **B-21658**

ECOLOGY
Biota of the antarctic pack ice: R/V *Hero* cruise 76-6 [1977, eng] **B-19598**

GEOGRAPHIC DISTRIBUTION
Biology of the South Shetland Islands leopard seal [1977, rus] **B-19885**
Biology of crabeater seals [1977, rus] **B-19888**
Kerguelen seals on King George Island [1977, rus] **B-19892**
Observations of marine mammals and other animals during the antarctic expedition of the USSR Aeademy of Sciences (1957-1958) [1970, eng] **B-21091**

MIGRATION
Biology of the South Shetland Islands leopard seal [1977, rus] **B-19885**
Biology of crabeater seals [1977, rus] **B-19888**

MORPHOLOGY
Morphology of some Antarctic seals [1976, eng] **B-19995**

NUTRITION
Cow-pup behaviour of the Weddell seal, *Leptonychotes weddelli* (Pinnipedia), in McMurdo Sound, Antarctica [1979, eng] **B-21442**

PATHOLOGY
Disease and injury in the southern elephant seal [1977, eng] **B-19313**

PHYSIOLOGY
Pulmonary metabolism during diving in the Weddell seal [1977, eng] **B-19326**
Serum protein in southern fur seals [1970, eng] **B-19411**
Awake breath-hold diving in the Weddell Seal [1977, eng] **B-19595**
Antehypophyseal histology of the Weddell seal [1971, fre] **B-19798**
Fur seal haematology [1978, eng] **B-20551**
General physiology of the Pinnipedia [1968, eng] **B-20868**
Blood chemistry of freely diving Weddell seals [1978, eng] **B-21598**

POPULATION
Growth of a fur seal population [1977, eng] **B-19474**
Colonial behavior of antarctic marine mammals in eastern McMurdo Sound [1977, eng] **B-19597**
Biota of the antarctic pack ice: R/V *Hero* cruise 76-6 [1977, eng] **B-19598**
Analysis of the dynamics of a Weddell seal population [1977, eng] **B-19751**
Kerguelen seals on King George Island [1977, rus] **B-19892**
Results of the third seal survey in the King Haakon VII Sea, Antarctica [1976, eng] **B-19896**
Weddell seal population dynamics Scott Base to Cape Royds [1978, eng] **B-20316**
Status of the antarctic fur seal at South Shetland Is. [1978, eng] **B-20791**
Isolated population of Weddell seals [1972, eng] **B-20893**
Antarctic fur seal in the Chilean Antarctic [1977, spa] **B-20908**
New methodology for studying *Phocidae* (Pinnipedia) [1977, spa] **B-21432**
Bird and seal observations at Joinville Island and offshore islands [1978, eng] **B-21595**
Seal and emperor penguin survey, Victoria Land Coast [1978, eng] **B-21596**
Breeding status of southern elephant seals at King George Island [1978, eng] **B-21597**
Colonial behavior of the Weddell seal in eastern McMurdo Sound [1978, eng] **B-21599**

TAXONOMY
Serum protein in southern fur seals [1970, eng] **B-19411**

Mantle studies
Plate tectonics [1978, eng] **E-20182**
Extension behind island arcs and motions relative to hot spots [1978, eng] **E-21053**
Nd and Sr isotope data on cal-alkaline andesites and plateau lavas from South America [1979, eng] **E-21224**
Crust and upper mantle dynamics in regions of continental glaciation [1969, rus] **L-19855**
Rb-Sr mantle isochrons and variations in the chemistry of Gondwanaland's lithosphere [1978, eng] **L-19879**
Rodriguez, Darwin, Amsterdam, ... a second type of hotspot island [1978, eng] **L-21052**

Manuals
See: Handbooks

Manuscripts
List of Royal Geographic Society archives on Antarctica [1976, eng] **A-20006**

Maps and charts
Presentation of the 1:2,500,000 geologic map of Antarctica [1977, fre] **C-19753**
World map series [1973, eng] **C-19993**
Polar regions: atlas [1978, eng] **C-20355**
Maps of the polar regions through the 19th century [1978, ger] **C-20886**
"Mountains of German-Soviet friendship" in Enderby Land (Antarctica) [1977, ger] **C-21083**
Antarctic gravity anomaly map [1978, rus] **C-21702**
Reconnaissance geologic map of the Boyd Glacier quadrangle, Marie Byrd Land, Antarctica [1977, eng] **E-19400**
Reconnaissance geological map of the Guest Peninsula quadrangle, Marie Byrd Land, Antarctica [1977, eng] **E-19401**
Geologic map of Antarctica: 1:2,500,000 [1977, fre] **E-19797**
Geomorphological map of Antarctica (1:15,000,000) [1978, rus] **E-21704**
Soviet glaciological studies in 1976 [1977, rus] **F-20171**
Antarctic ice charts 1975-76 [1977, eng] **F-20521**
Flow rate and ice discharge of the Hays, Campbell and Assender Glaciers, Enderby Land, Antarctica [1977, ger] **F-21156**
See also under: Geology; Geomagnetic field; Ice; Meteorology; Oceanography; Terrestrial physics

Marine biology
Discussion on scientific research in Antarctica [1977, eng] **A-20272**
Meeting on the Ross Ice Shelf Project [1978, eng] **A-21175**
Plankton diatoms in the South Pacific Ocean [1968, eng] **B-19251**
Antarctic radiolaria and the late Tertiary and Quaternary history of the Southern Ocean [1964, eng] **B-19253**
Phytoplankton within the Antarctic Convergence [1969, eng] **B-19399**
Living resources of Southern Ocean [1977, eng] **B-19456**
Foraminifera and radiolaria in sediments of the Scotia and Weddell Seas [1967, eng] **B-19519**
Ross Ice Shelf Project—benthic biology, 1976-1977 [1977, eng] **B-19614**
Ecosystem modeling for the southern ocean [1977, eng] **B-19615**
Antarctic krill resource: prospects for commercial exploitation [1978, eng] **B-19864**
Living resources of the Southern Ocean [1977, eng] **B-20001**
Marine biology. Vol.2. Biological productivity of the ocean [1977, rus] **B-20017**
Ecosystem diversity differences: poles and tropics [1977, eng] **B-20038**
Productivity of the antarctic and tropical/subtropical regions [1977, eng] **B-20043**
Conservation of antarctic living marine resources [1978, eng] **B-20221**
Role of krill in the antarctic marine ecosystem [1977, eng] **B-20222**

Conservation of southern ocean marine resources [1978, eng] B-20223
Aquatic primary production in the Antarctic [1977, eng] B-20274
Conservation in the Antarctic [1977, eng] B-20275
Place of the Antarctic in biological sciences [1977, eng] B-20276
Mathematical analysis of bottom fauna distribution [1978, rus] B-20444
Some ways of increasing the world ocean bioproductivity [1977, eng] B-20512
Distribution of indicator species of planktonic algae in the world ocean [1978, eng] B-20606
Antarctic marine biological research by divers [1978, rus] B-20680
Plankton of Foster Bay, Deception Island, December 1970 [1977, spa] B-20909
Harvesting: ecological and energy considerations [1978, eng] B-21081
BIOMASS [1978, eng] B-21082
Life below the Ross Ice Shelf, Antarctica [1979, eng] B-21101
Fish, crustaceans, and the sea floor under the Ross Ice Shelf [1979, eng] B-21102
Occurrence and metabolic activity of organisms under the Ross Ice Shelf, Antarctica, at Station J9 [1979, eng] B-21103
Microbial life at low temperatures: ecological aspects [1978, eng] B-21169
Testing microbial activity in marine environments [1977, eng] B-21185
Ecological interactions in the Southern Ocean [1979, eng] B-21225
Examination of twelve plankton species [1964, eng] B-21265
Microplankton from "Productividad 3" oceanographic cruise [1971, spa] B-21269
Exploring Macquarie Island. Part 2. Subantarctic refuge [1978, eng] B-21374
Illustrated introduction to antarctic wildlife [1976, ita] B-21382
Salinity and nutrient effects on the induction of the galactose permease system in a psychrophilic marine *Vibrio* [1978, eng] B-21434
Marine living resources of the Southern Ocean [1978, eng] B-21471
Ecology of the Southern Ocean region [1978, eng] B-21472
Benthic marine biology, Ross Ice Shelf Project [1978, eng] B-21585
Polar biological specimens [1978, eng] B-21641
Biological Investigations of Marine Antarctic Systems and Stocks (BIOMASS). Vol. 1: Research proposals [1977, eng] B-21659
Studying Southern Ocean biological resources [1978, rus] B-21706
Sediments and life under the Ross Ice Shelf (J-P), Antarctica [1978, eng] E-21586
Terrestrial and marine sources for atmospheric ice nuclei [1976, eng] F-20306
Ecological aspects of iceberg transport from antarctic waters [1978, eng] F-20485
Ross Ice Shelf Project [1979, eng] F-21094
Polar Oceans conference proceedings [1977, eng] J-20022
Deep sea macrobenthos trophic structure [1976, rus] J-20230
Voyage of discovery [1977, eng] J-21022
Abyssal traces and megafauna in the Arctic and Antarctic [1978, eng] J-21452
Soviet research in the Southern Ocean [1978, rus] J-21693
Legal status of the Antarctic [1976, eng] M-20189

Marine geology
See: Submarine geology

Marking
See under: Aves; Mammalia-Cetacea

Mass balance
See under: Glacier ice; Ice sheet; Shelf ice; Snow

Materials
Aluminium corrosion assessment in Antarctica [1978, eng] G-20874
Concreting in Antarctica [1978, eng] G-20875
Field guide for portland cement concrete construction in Antarctica [1969, eng] G-21200

Mechanical properties
See under: Firn; Glacier ice; Ice; Ice Sheet; Icebergs; Pack ice; Sea ice; Snow

Medical facilities
Deep Freeze 1979 Cruise Report [1979, eng] G-21488
Medical care in French austral and antarctic territories [1976, fre] H-20345
Human adaptation to unusual living conditions [1978, rus] H-21031
Problems of adaptation and antarctic support systems [1978, rus] H-21032
Transmitting ECG's from Antarctica to Moscow by radio [1977, rus] H-21146
Human adaptation and health in Antarctica [1978, rus] H-21707

Medical sciences

INSTRUMENTS
Transmitting ECG's from Antarctica to Moscow by radio [1977, rus] H-21146

Meetings
See: Conferences

Meltwater
Nutrient fluxes in Lake Bonney—a meromictic antarctic lake [1977, eng] B-20892
Snowmelt as a water source for antarctic microorganisms [1978, eng] B-21601
Ecosystem comparisons of oasis lakes and soils [1978, eng] B-21605
Dating of geochemical events in Lake Bonney, Antarctica, and their relation to glacial and climate changes [1977, eng] E-20757
Ice age, past and present [1977, eng] F-19863
Extraction of gases and dissolved and particulate matter from ice in deep boreholes [1977, eng] F-20123
View of the formation of saline waters in the dry valleys [1978, eng] F-20374
Osmotic propulsion of icebergs [1978, eng] F-20469
Ecological aspects of iceberg transport from antarctic waters [1978, eng] F-20485
Melting of antarctic icebergs [1978, eng] F-20705
On melting icebergs [1978, eng] F-20907
On melting icebergs [1978, eng] F-21061
Model for melting of ice in sea water [1979, eng] F-21226
Standards for stable isotope measurements in natural compounds [1978, eng] J-20784
Circulation and melting beneath the Ross Ice Shelf [1979, eng] J-21098

FORMATION
Meltwater near Showa Station [1977, eng] F-19522

Mesosphere
Temperature and wind velocity variations in the winter polar mesosphere [1974, eng] I-20135

Meteorites
See: Extraterrestrial material

Meteorological observations
See: Weather observations

Meteorology
Mass budget of the Mizuho Plateau ice sheet [1978, eng] F-19840
905-meter deep core drilling at dome C and related surface programs [1978, eng] F-21532
Operational meteorology, *Deep Freeze* '77 [1977, eng] I-19735
National Atmospheric Sciences Program: Fiscal year 1969 [1968, eng] I-20493
Polar experiment results and plans [1978, rus] I-20611
Collecting and processing hydrometeorological data in polar regions [1978, rus] I-20613
Operational meteorology, *Deep Freeze* 78 [1978, eng] I-21614

INSTRUMENTS
Radiation budget at Plateau Station, Antarctica, 1966-1967 [1977, eng] I-19337
Comparability of CO2 measurements [1977, eng] I-19338
Automatic Weather Station in Antarctica [1977, eng] I-19362
Atmospheric processes and energy transfers at the South Pole [1977, eng] I-19700

Meteorology

INSTRUMENTS *(cont.)*

Lidar and replication studies of ice crystal precipitation at the South Pole [1977, eng] **I-19701**

Acoustic sounder operations at South Pole Station [1977, eng] **I-19702**

Meteorological research aboard instrumented LC-130R airplane and at the South Pole [1977, eng] **I-19704**

Air-sea interaction studies using an X-band radar at Palmer Station [1977, eng] **I-19707**

Solar radiation measurements in the Weddell Sea, 1977 [1977, eng] **I-19708**

Effectiveness of collecting meteorological data in Antarctica by means of simultaneous or consecutive querying of stations by shortwave [1977, rus] **I-20169**

Methods and results of studying radiation properties of snow-firn covers [1977, rus] **I-20426**

Methods and results of the gradient and micropulsation measurements of air temperature and wind velocity [1977, rus] **I-20427**

Evaluation of the informational value of upper-air and satellite measurement systems [1977, rus] **I-20515**

Meteorological data gathered by ARDS [1978, eng] **I-21006**

Boundary layer research at South Pole Station using acoustic remote sensing [1978, eng] **I-21612**

Antarctic tritium measurements [1978, eng] **I-21617**

State of the art and future prospects for antarctic meteorological research [1978, rus] **I-21691**

MAPS AND CHARTS

Climate of the upper air: Southern Hemisphere. Vol.3. Vector mean geostrophic winds: isogon and isotach analyses [1971, eng] **I-20140**

Reanalysis of synoptic maps of the South Pacific and Atlantic Oceans from April 1967 to March 1968 [1969, spa] **I-20214**

Environmental inventories: Antarctic area [1978, eng] **I-20425**

Aerological stations in southern high latitudes [1977, rus] **I-21268**

MODELS

Polar sub-programme of GARP [1978, eng] **A-20983**

Energy balance climate models [1978, eng] **I-19990**

Polar Sub-programme [1978, eng] **I-20823**

Stratospheric warmings: observations and theory [1978, eng] **I-21002**

Antarctic influence on Brazil's environment [1977, eng] **I-21062**

Climatic change and variability: a southern perspective [1978, eng] **I-21105**

Antarctic 500-mb and ground level conditions [1977, rus] **I-21139**

Climatonomical modeling of temperature response to dust contamination of antarctic snow surfaces [1977, eng] **I-21377**

U.S. contribution to the Polar Experiment (POLEX). Part 1. POLEX-GARP (North). Part 2. POLEX-GARP (South) [1974, eng] **I-21467**

Possible mechanism of meridional atmospheric circulation over Antarctica [1978, eng] **I-21613**

Circulation features of the Antarctic atmosphere and the Southern Ocean [1978, rus] **K-21694**

Microbiology

Distribution of anaerobic bacteria [1977, jap] **B-19302**

First environmental impact monitoring amd assessment in Antarctica. The Dry Valley Drilling Project [1977, eng] **B-19314**

Effect of temperature on growth of obligately psychrophilic bacteria [1977, eng] **B-19416**

Some physiological changes of an obligate psychrophile at supermaximum growth temperatures [1977, eng] **B-19417**

Limnology of fresh water lakes at Anvers Island, Antarctica [1971, eng] **B-19490**

Baseline microbiological data for soils of the Dufek Massif [1977, eng] **B-19611**

Microorganisms in antarctic desert rocks from dry valleys and Dufek Massif [1977, eng] **B-19612**

Microbial distribution and activity in and around McMurdo Sound [1977, eng] **B-19613**

Environmental impact in Antarctica [1978, eng] **B-19978**

Environmental appraisal for the Dry Valley Drilling Project phases III, IV, V (1973-74, 1974-75, 1975-76) [1978, eng] **B-19980**

Summary of environmental monitoring and impact assessment of the DVDP [1978, eng] **B-19982**

Potential impact on Lake Bonney of activities associated with modeling freshwater antarctic ecosystems [1978, eng] **B-19983**

Terrestrial adaptations in polar regions [1978, eng] **B-20207**

Bacterial flora of antarctic krill [1978, eng] **B-20504**

Life inside Martian rocks [1978, eng] **B-20799**

Littoral ecology of Marion and Prince Edward Islands (Southern Ocean) [1976, eng] **B-20835**

Sea ice organisms and their importance to the antarctic ecosystem (Review) [1978, eng] **B-20878**

Ecological investigations of yeasts in antarctic soils [1978, eng] **B-20900**

Taxonomy of antarctic bacteria from soils and air primarily of the McMurdo Station and Victoria Land dry valleys region [1978, eng] **B-20901**

Barotolerance of psychrophilic marine vibrio in antarctic waters [1978, eng] **B-20978**

Effects of starvation on a psychrophilic marine vibrio [1976, eng] **B-20992**

Survival of a psychrophilic marine vibrio under long-term nutrient starvation [1977, eng] **B-20993**

Occurrence and metabolic activity of organisms under the Ross Ice Shelf, Antarctica, at Station J9 [1979, eng] **B-21103**

Microbial life at low temperatures: ecological aspects [1978, eng] **B-21169**

Lichen-invertebrate associations [1977, eng] **B-21176**

Testing microbial activity in marine environments [1977, eng] **B-21185**

Life found inside antarctic rocks [1978, eng] **B-21223**

Photosynthetic bacteria from Lake Vanda (Antarctica) [1978, eng] **B-21240**

Identification of some fungi from soil and air of Antarctica [1978, eng] **B-21352**

Salinity and nutrient effects on the induction of the galactose permease system in a psychrophilic marine *Vibrio* [1978, eng] **B-21434**

Microbial life beneath the Ross Ice Shelf [1978, eng] **B-21578**

Microbial investigations in the Ross Sea [1978, eng] **B-21579**

Snowmelt as a water source for antarctic microorganisms [1978, eng] **B-21601**

Paleoenvironmental analysis and correlation of a Cretaceous *Islas Orcadas* core from the Falkland Plateau, Southwest Atlantic [1977, eng] **E-20137**

Terrestrial and marine sources for atmospheric ice nuclei [1976, eng] **F-20306**

Selecting drills for microbiological studies of deep glacier layers at Vostok Station [1978, rus] **F-20726**

Bacteriological study of pollution [1977, jap] **H-19303**

Identification and biological characteristics of strains of psychrophilic bacteria isolated in diarrhea of polar workers and from antarctic lake water [1978, eng] **H-21427**

Respiratory virus transmission at McMurdo Station and Scott Base [1978, eng] **H-21606**

Respiratory virus infection late in isolation at the South Pole [1978, eng] **H-21607**

Tritium and carbon-14 distributions in McMurdo Sound, 1977 [1978, eng] **J-21545**

Microclimates

See under: Climate

Microseisms

See under: Seismology

Migration

See under: Arthropoda-Crustacea; Aves; Aves-Charadriiformes; Aves-Procellariiformes; Mammalia-Pinnipedia

Mineralogy

Antarctica. An information paper presented by Senator the Honourable J.J. Webster, Minister for Science [1977, eng] **A-19269**

Antarctic enlightenment [1977, eng] **A-19440**

Clay minerals in southeast Indian Ocean sediments [1977, eng] **E-19262**

Geochemistry of antarctic sediments [1975, eng] **E-19283**

Antarctica: a deep-freeze storehouse for meteorites [1977, eng] **E-19325**

Antarctic resources—effects of mineral exploration [1977, eng] **E-19350**

Distribution of ferromanganese deposits in the World Ocean [1972, eng] **E-19375**

Regional geochemistry of ferromanganese nodules in the world ocean [1972, eng] E-19376
Pleistocene manganese pavement production in the Tasman Sea [1972, eng] E-19377
Marine manganese deposits [1977, eng] E-19509
Sedimentary rocks from Charcot Island [1976, eng] E-19565
Volcanoes and volcanic rock in Antarctica [1977, jap] E-19586
Mineralogy and chemistry of suspended sediments [1977, eng] E-19642
Geological studies of the Dufek intrusion, Pensacola Mountains, 1976-1977 [1977, eng] E-19650
Geology of some volcanic rocks from the Ross Island, Mount Morning and southern Victoria Land areas [1977, eng] E-19658
Petrogenesis of Ferrar Group rocks [1977, eng] E-19661
Coal forming elements in permineralized peat from Mountain Augusta (Queen Alexandra Range) [1977, eng] E-19662
Zeolites in South Atlantic deep-sea sediments [1977, eng] E-19848
Proceedings of the second Symposium on Yamato Meteorites [1978, eng] E-19916
Yamato-74 meteorites [1978, eng] E-19917
First meteorites found in Victoria Land, Dec. 1976 and Jan. 1977 [1978, eng] E-19919
Possible mechanism of concentration of meteorites in Antarctica [1978, eng] E-19920
Classification for the Yamato-74 chondrites [1978, eng] E-19923
Mineralogical and petrographical studies of the Yamato meteorites, Yamato-7301(j), -7305(k), -7308(l) and -7303(m) from Antarctica [1978, eng] E-19924
Petrological studies of Yamato-74 meteorites (1) [1978, eng] E-19925
Petrological studies of Yamato-74 meteorites (2) [1978, eng] E-19926
Preliminary mineralogical examination of the Yamato-74 achondrites [1978, eng] E-19927
Yamato achondrite polymict breccias [1978, eng] E-19928
Rare gas studies of Yamato-7301(j), -7304(m) and -7305(k) [1978, eng] E-19929
Oxygen isotopes in several Yamato meteorites [1978, eng] E-19931
K-Ar age of Yamato meteorite, Yamato-74190-01(L) [1978, eng] E-19932
REE, Ba, Sr and Rb in the Yamato meteorites [1978, eng] E-19933
Supplementary notes on the magnetic classification of stony meteorites [1978, eng] E-19934
Magnetic properties of an iron meteorite and a pallasite [1978, eng] E-19935
Metallographic properties of Yamato iron meteorite and stony-iron meteorite [1978, eng] E-19936
Note on new antarctic iron meteorites [1978, eng] E-19937
Yamat-74662 meteorite: a carbonaceous chondrite Type II [1978, eng] E-19938
Inverted pigeonites from lunar breccia 76255 [1977, eng] E-20066
Cenozoic clay mineralogy [1977, eng] E-20177
Tephra in glacier ice [1977, eng] E-20180
Antarctic meteorite newsletter, Vol.1, No.1 [1978, eng] E-20188
Characterization of crust formation on a parent body of achondrites and the moon by pyroxene crystallography and chemistry [1976, eng] E-20228
Geochemistry of Ferrar dolerite from Don Juan Pond [1978, eng] E-20367
Antarctic meteorite newsletter, Vol.1, No.2 [1978, eng] E-20407
Antarctic meteorite Yamato 74123—a new ureilite [1978, eng] E-20410
Peridot on Ross Island—Antarctica [1974, eng] E-20593
Geochemistry of basalt-sea-water interactions: evidence from Deception Island, Antarctica, and Reykjanes, Iceland [1977, eng] E-20618
Tectonic zonation and geological evolution of Antarctica [1978, rus] E-20674
Antarctic meteorite [1978, eng] E-20697
Mineralogy of ejecta from Mt. Erebus [1977, eng] E-20758
Separation of primary ice-rafted debris from lag deposits in the Southern Ocean [1978, eng] E-20798
Major element geochemistry of Ross Sea sediments [1978, eng] E-20879
Antarctic meteorite newsletter, Vol.1, No.3 [1978, eng] E-20960
Geology of the Gerlache Strait, 64-65S [1976, spa] E-21009
Curator finds rare meteorites in antarctic group [1978, eng] E-21017
Antarctic mineral resources [1978, eng] E-21079
Miocene glaciomarine sediments from beneath the southern Ross Ice Shelf, Antarctica [1979, eng] E-21095
Terrestrial ages of four Allan Hills meteorites [1979, eng] E-21104
Eleven new meteorites from Antarctica, 1976-1977 [1978, eng] E-21124
Petrology of the Yamato meteorites (j), (k), (l), and (m) from Antarctica [1978, eng] E-21125
Cosmic-ray-produced Mn-53 in thirty-one meteorites [1978, eng] E-21129
Quartz-pyrite rocks of the South Shetland Islands, western Antarctic Peninsula [1978, eng] E-21216
Energy search turns to Antarctic [1978, eng] E-21235
Compositions of three tephra layers from the Byrd Station ice core, Antarctica [1978, eng] E-21239
Metamorphic petrology of the Sarmiento ophiolite complex, Chile [1978, eng] E-21287
Trace element chemistry of the Kirkpatrick basalt, Storm Peak, Central Transantarctic Mountains [1974, eng] E-21483
Petrologic study of the granulite-facies metamorphic rocks of Enderby Land [1978, eng] E-21497
Geological investigations in the Leverett Glacier area [1978, eng] E-21498
Plutonic rocks from the Ruppert Coast, West Antarctica [1978, eng] E-21500
Geologic studies in Orville Coast and eastern Ellsworth Land, Antarctic Peninsula [1978, eng] E-21501
Geological studies in the McMurdo region [1978, eng] E-21506
Ages for vida granite and olympus granite gneiss, Victoria Valley [1978, eng] E-21508
Rubidium-strontium geochronology of granitic rocks from Mr. Chapman [1978, eng] E-21509
Geology of DVDP 1 and the hyaloclastite of DVDP 3, Hut Point Peninsula, Antarctica [1978, eng] E-21520
Volcanoes in the Hobbs Coast and Ruppert Coast sectors of Marie Byrd Land [1978, eng] E-21521
Volcanic geology of the lower slopes of Mt. Morning [1978, eng] E-21523
Suspended particulate matter on the southern Argentine shelf [1979, eng] J-21115
Copper, zinc and lead minerals suspended in ocean waters [1979, eng] J-21127
Reduction in the South Pacific zone of high bottom current activity [1978, eng] J-21568
Report on Ninth Consultative Meeting of the Antarctic Treaty [1977, eng] M-19324
Legal status of the Antarctic [1976, eng] M-20189
International cooperation under the Antarctic Treaty [1978, eng] M-20789

Mites

See: Arthropoda-Arachnida

Models

See under: Atmospheric physics; Biology; Geology; Ice; Meteorology; Oceanography; Terrestrial physics

Mollusca

Effect of antarctic ice cover on Chilean marine faunas [1978, eng] B-21516
Three new species of *Pulvinites* [1978, eng] E-20547
Valanginian fauna in the Byers Peninsula, Livingston Island [1976, spa] E-21085
Eocene nautiloid fauna from La Meseta Formation, Seymour Island [1978, eng] E-21515
Glacier history of the McMurdo Sound region [1977, eng] F-19676

BREEDING CYCLES AND REPRODUCTION

Reproductive biology of the brooding antarctic lamellibranch *Kidderia subquadratum* Pelseneer [1974, eng] B-19284
Reproduction of some littoral molluscs from Macquarie Island (Subantarctic) [1977, eng] B-19853

ECOLOGY

Paleontological investigations in the Ellsworth Mountains [1977, eng] E-19668

EVOLUTION

Struthiolaridae (Gastropoda) fauna from Seymour Island, Antarctic Peninsula [1976, eng] B-20397

GEOGRAPHIC DISTRIBUTION
Morphology and distribution of an antarctic cranchiid squid [1971, eng] B-19249
Record of *Mytilus edulis* L. from South Georgia [1976, eng] B-19563
Antarctic mollusca [1971, eng] B-20926
Chlamys delicatula and *Jacquinotia edwardsii* [1977, eng] E-19465

MORPHOLOGY
Morphology and distribution of an antarctic cranchiid squid [1971, eng] B-19249
Systematics and morphology of the antarctic cranchiid squid *Galiteuthis glacialis* (Chun) [1978, eng] B-21148
Redescription of the antarctic opisthobranch *Philine gibba* Strebel, 1908, from the type locality, South Georgia, South Atlantic [1978, eng] B-21218

PHYSIOLOGY
Antarctic marine secondary production and the phenomenon of cold adaptation [1977, eng] B-19473

TAXONOMY
Bivalve mollusc *Limatula:* a review [1978, eng] B-20101
Athoracophorus bitentaculatus [1978, eng] B-20550
Systematics and morphology of the antarctic cranchiid squid *Galiteuthis glacialis* (Chun) [1978, eng] B-21148
Redescription of the antarctic opisthobranch *Philine gibba* Strebel, 1908, from the type locality, South Georgia, South Atlantic [1978, eng] B-21218
Late Cambrian Brachiopoda, Mollusca, and Trilobita from northern Victoria Land, Antarctica [1976, eng] E-20142
Zoogeographic and taxonomic review of euthecosomatous Pteropoda [1977, eng] E-20566
Late Jurassic bivalves from Ellsworth Land [1977, eng] E-20755

Morphology
See under: Arthropoda-Arachnida; Arthropoda-Crustacea; Aves-Charadriiformes; Aves-Procellariiformes; Aves-Sphenisciformes; Bryophyta-Musci; Bryozoa; Coelenterata; Echinodermata; Mammalia; Mammalia-Cetacea; Mammalia-Pinnipedia; Mollusca; Pisces; Porifera; Spermatophyta; Thallophyta-Algae; Thallophyta-Lichens; Vermes

Mosses
See: Bryophyta-Musci

Mountaineering
Mountain climbing on Heard Island [1963, eng] A-21720
Mountain climbing on Mt. Lister [1963, eng] A-21721

Musci
See: Bryophyta-Musci

Museums and exhibits
Maintenance of historic huts in Antarctica [1978, eng] A-20310
Cool California penguins [1979, eng] B-21261
Wilkes Expedition [1971, eng] D-20019

National interests
Antarctica. An information paper presented by Senator the Honourable J.J. Webster, Minister for Science [1977, eng] A-19269
Antarctic riches—for whom [1977, eng] A-19438
Attention on Antarctica [1977, eng] A-19439
Antarctic enlightenment [1977, eng] A-19440
Krill rush: tiny fish puts Antarctica up for grabs [1978, eng] A-19866
"Uruguayan Flag at the Pole" from the 60th parallel to the Antarctic [1976, spa] A-20192
France's antarctic policy and research effort [1976, fre] A-20344
Exploiting antarctic mineral resources—technology, economics, and the environment [1978, eng] A-21470
Whale controversy: United States vs. Japan [1974, eng] B-20132
Conservation in the Antarctic [1977, eng] B-20275
In for the krill [1978, eng] B-20525
Mineral resources and geopolitics in Antarctica [1979, eng] E-21652
Icebergs for use as freshwater [1978, eng] F-20403
Iceberg utilization [1978, eng] F-20448
Challenges of iceberg utilization [1978, eng] F-20449
Problems associated with iceberg utilization [1978, eng] F-20450
International law problems of acquisition and transportation of antarctic icebergs [1978, eng] F-20480
Some international implications of iceberg transfer [1978, eng] F-20481
Legal/political aspects of antarctic iceberg utilization [1978, eng] F-20482
Aspects of transporting icebergs from Antarctica to the United States [1978, eng] F-20483
Report on Ninth Consultative Meeting of the Antarctic Treaty [1977, eng] M-19324
United States antarctic policy [1978, eng] M-19570
[Press briefing] [1977, eng] M-19581
[Press briefing] [1977, eng] M-19582
[Press briefing] [1977, eng] M-19583
Political and legal analysis: the Antarctic Treaty [1978, eng] M-20151
Chronicles of the South Atlantic: Patagonia, Falkland Islands and Antarctica [1974, spa] M-20174
1906—appointment of deputies for the antarctic islands and territories [1975, spa] M-20252
Possibilities of internationalization of Antarctica [1977, ger] M-20288
Congressional hearings on criminal acts in Antarctica [1977, eng] M-20381
International cooperation under the Antarctic Treaty [1978, eng] M-20789
Antarctica: geopolitical football [1977, eng] M-20832
National security policy for the Antarctic [1974, eng] M-20987
Antarctica, the Southern Ocean, and the law of the sea [1977, eng] M-21065
Antarctica: conflict or compromise [1978, eng] M-21075
Offshore oil and gas in Antarctica [1977, eng] M-21266
Argentine plans to invade Falklands foiled [1975, eng] M-21273
British relations with her Falkland subjects [1968, eng] M-21368
Trends and prospects for regimes for living and mineral resources in the Antarctic [1979, eng] M-21369
The antarctic regime: an introduction [1978, eng] M-21468
Recommended approach to the antarctic resource problem [1978, eng] M-21473
Antarctic system and the utilization of resources [1978, eng] M-21474
The international community and Antarctica [1978, eng] M-21475
Antarctica and the questions of the exploitation of its resources [1977, eng] M-21654
See also: Territorial claims and boundaries

National programs
See: Research programs

Navigation
Radar as an aid to surface navigation in Antarctica [1977, eng] G-19348

AIR
Features of aviation meteorology in Antarctica [1978, rus] I-20742

SEA
Harvesting of krill [1977, eng] B-20002
Structure and characteristics of fast ice in Alasheyev Bight [1968, eng] F-20337
Antarctic ice charts 1975-76 [1977, eng] F-20521
Interaction of the hull of the *Ob'* with compressed ice [1978, rus] F-20749
Moving ice [1978, eng] F-21078
Navigation of *Soya* in the Antarctic Ocean [1978, jap] G-19766
Deep Freeze 1978 cruise report [1978, eng] G-19865
Results of navigability trials of antarctic ice by the *Ob'* [1978, rus] G-20739
Resonant hull vibrations of the *Ob'* when traversing ice cake [1978, rus] G-20748
Polar icebreaker cruise report, Operation *Deep Freeze* '79 [1979, eng] G-21256
Problems of exploitation and conservation of the ocean [1977, rus] J-20517

Nuclear power
See: Power/Nuclear

Nuclei
See: Aerosols

Nutrition

Preparing vitamin A from antarctic icefish liver [1972, rus] A-20808
Using krill meal as feed [1966, rus] A-20869
On the biological value of krill paste [1971, rus] B-19410
Chemical changes in boiled antarctic krill [1976, jap] B-19447
Effect of a new food product, krill paste, on chemical carcinogenesis [1976, rus] B-20431
Experiments in making sausages from krill [1978, eng] B-20526
Utilization of krill shells in feeding experiments with rats [1978, ger] B-20560
Amino acid content of krill and krill meal [1970, rus] B-20819
Using dehydrated "Okean" protein paste in foods [1976, rus] B-20821
Zooplankton fisheries of the world: a review [1978, eng] B-20831
Quality and tastiness of antarctic fish [1977, ger] B-20971
Effect of krill stomach content on quality of krill paste [1977, ger] B-20977
Development of concentrated protein food material from antarctic krill [1977, eng] B-21232
Dehydration effects on krill protein [1978, chi] B-21249
Variability in protein and fat content of krill *(Euphausia superba* Dana) [1978, ger] B-21345
Living conditions during the antarctic winter [1973, jap] G-19442
Nutrition and food supply in Antarctica [1963, jap] G-19445
Mechanical processing of antarctic fish [1977, ger] G-20970
Quality of preservation of antarctic fish and krill products [1977, ger] G-20972
Analysis of moisture retention in krill paste [1977, ger] G-20973
Measuring moisture in krill meal [1977, ger] G-20976
Energy balance in man [1977, eng] H-20143
Vitamin A and Sir Douglas Mawson [1978, eng] H-20514
Assimilation by the organism of aminoacids of the protein product paste "Ocean" [1974, rus] H-20866
Characteristics of the diet for wintering antarctic personnel [1975, eng] H-20988
Clinical and biochemical studies of acclimatization [1978, rus] H-21036
See also under: Arthropoda-Crustacea; Aves-Anseriformes; Aves-Charadriiformes; Aves-Sphenisciformes; Mammalia; Mammalia-Cetacea; Mammalia-Pinnipedia; Pisces; Thallophyta-Algae. *See also:* Food supply

Observers

Scenery of the south: Falkland Islands, South Georgia, Subantarctic islands [1975, eng] A-19370
1974 visit to the new South Pole Station [1976, jap] A-19426
Visit to Antarctica [1976, jap] A-19428
Report of an ANARE observer [1976, jap] A-19429
Richard Harrington's Antarctic [1976, eng] A-19469
Focus on the Falkland Islands [1971, eng] A-19483
Media representatives in Antarctica [1977, eng] A-19736
Recalling 20 years of JARE [1978, jap] A-19773
Antarctic sightseeing flight by Air New Zealand [1978, jap] A-19775
Life at the bottom: the people of Antarctica [1977, eng] A-20018
Argentine antarctic as you've never seen it [1971, spa] A-20271
Gathering materials for a second book about Antarctica [1978, eng] A-21647
Penguins, whalers, and sealers: a voyage of discovery [1977, eng] B-20497
American ham operator at Mirnyy [1979, eng] G-21711
Around the world, pole to pole, in 48 hours [1977, eng] I-20150

Ocean

Spring meeting 1977, abstracts [1977, eng] A-21360
Spring meeting 1978, abstracts [1978, eng] A-21364
Fall meeting 1978, abstracts [1978, eng] A-21365
Circum-Antarctic marine geology [1977, eng] E-19254
Radar and satellite communications system at Palmer Station [1978, eng] G-19757
Role of the polar regions in global climate change [1978, eng] I-20202
Polar Sub-programme [1978, eng] I-20823
Influence of Southern Ocean on climate [1978, eng] I-21106
Cenozoic climates: Antarctica and the Southern Ocean [1978, eng] I-21107
Current status of Soviet investigations of the Arctic and Southern Oceans [1977, rus] J-19588
Results and prospects of Soviet research in the Southern Ocean [1978, rus] J-20676
Oceanic fronts [and] European Geophysical Society meeting abstracts [1977, eng] J-21362
Soviet research in the Southern Ocean [1978, rus] J-21693
See also: Sea water

CIRCULATION

Phytoplankton within the Antarctic Convergence [1969, eng] B-19399
Amphipods and polychaetes of both polar oceans compared [1977, eng] B-20042
Distribution of displaced antarctic diatoms in the Argentine Basin [1978, eng] B-20843
Influence of hydrologic conditions on the distribution of baleen whales [1973, eng] B-21199
Effect of antarctic ice cover on Chilean marine faunas [1978, eng] B-21516
Clay minerals in southeast Indian Ocean sediments [1977, eng] E-19262
Geologic history of the Maurice Ewing Bank of the Falkland Plateau [1977, eng] E-19263
Southeast Indian Ocean: upper Pleistocene calcareous nannofossil zones and paleoclimatic history [1975, eng] E-19281
Pleistocene manganese pavement production in the Tasman Sea [1972, eng] E-19377
History of sediment lithofacies in the South Atlantic Ocean [1977, eng] E-19852
Indian Ocean sediment distribution since the Late Jurassic [1978, eng] E-19876
Sedimentological clues to palaeo-oceanography [1977, eng] E-20569
Separation of primary ice-rafted debris from lag deposits in the Southern Ocean [1978, eng] E-20798
Metamorphic petrology of the Sarmiento ophiolite complex, Chile [1978, eng] E-21287
Studies of deep-sea benthonic foraminifera in the southeast Indian Ocean [1978, eng] E-21570
Terrestrial and marine sources for atmospheric ice nuclei [1976, eng] F-20306
Dynamics of the Balleny ice ridge [1978, rus] F-20762
On the role of cosmogeophysical forces in polar hydrometeorological processes [1977, eng] I-19787
Polar experiment results and plans [1978, rus] I-20611
Collecting and processing hydrometeorological data in polar regions [1978, rus] I-20613
Summer turbulent atmosphere-ocean exchange in the Drake Passage in 1976 [1978, rus] I-20643
Major features of oceanographic development interpreted from microfossils [1977, eng] J-19257
Cenozoic and Late Mesozoic paleooceanographic and paleoglacial history [1977, eng] J-19261
Variability of deep flow in the Drake Passage [1977, eng] J-19319
Depositional history of the South Atlantic Ocean [1977, eng] J-19321
Water budget of Drake Passage and Scotia Sea basin [1977, eng] J-19373
Dynamics of the Antarctic Circumpolar Current [1969, eng] J-19390
On the abyssal temperatures of the World Oceans [1968, eng] J-19544
Water circulation along an Antarctica-Africa profile [1974, rus] J-19590
Stirring processes within the antarctic Polar Front Zone [1977, eng] J-19626
Soviet-American research aboard RV *Professor Zubov* [1977, eng] J-19627
Effect of meridional circulation in large scale current topography interactions [1977, eng] J-19630
Deep sea drilling contributions to antarctic evolution studies [1977, eng] J-19638
Structure of large-scale circulation of Atlantic Ocean waters [1977, eng] J-19741
Circulation of the world ocean: global studies [1977, eng] J-19782
No-motion layer of the world ocean [1977, eng] J-19783
Computation of water circulation of the Southern Ocean by the isopycnic model [1977, eng] J-19789
Tidal currents in the central Weddell Sea [1977, eng] J-19809
Basin waters of the Bransfield Strait [1978, eng] J-19913

Ocean

CIRCULATION *(cont.)*

Sedimentation and Antarctic Bottom Water circulation in the southeast Indian Ocean [1978, eng] **J-19992**
Antarctic water masses and circulation [1977, eng] **J-20023**
Antarctic oceanographic zonation [1977, eng] **J-20024**
Study of the east-west antarctic current by means of icebergs tracked by the EOLE satellite [1977, eng] **J-20026**
Circulation across the ice shelf edge in McMurdo Sound, Antarctica [1977, eng] **J-20028**
Water masses and circulation in the Weddell Sea [1977, eng] **J-20029**
Antarctic Bottom Water formation in the Weddell Sea [1977, eng] **J-20030**
International Southern Ocean studies [1977, eng] **J-20032**
Distribution of antarctic intermediate waters in the world ocean [1978, eng] **J-20138**
Modeling of tracers: salinity and oxygen [1978, eng] **J-20185**
Antarctic Intermediate water in the intertropical Atlantic [1975, fre] **J-20197**
Contributions to the dynamics of the Antarctic Circumpolar Current. 2. Integral relationships [1975, eng] **J-20244**
Topographic effect on the deep circulation and the abyssal oxygen distribution [1978, eng] **J-20249**
Diagnostic calculations of world ocean horizontal circulation [1977, rus] **J-20445**
Large-scale circulation of the world ocean [1977, rus] **J-20446**
Physical and chemical data. *Piquero* Expedition 16 December 1968-16 April 1969 [1974, eng] **J-20518**
Oceanographic data from the Nemo Ross Sea Expedition, 1972 [1974, eng] **J-20523**
Variability of the antarctic polar frontal zone [1978, eng] **J-20532**
Large-scale relative dynamic topography of the Southern Ocean [1978, eng] **J-20533**
Studying Southern Ocean circulation [1978, rus] **J-20635**
Horizontal circulation in the Drake Passage [1978, rus] **J-20636**
Current measurement by means of buoys in the Drake Passage [1978, rus] **J-20637**
Climatic characteristics of the Antarctic Polar Front Zone [1978, eng] **J-20707**
Light-scattering observations in frontal zones [1978, eng] **J-20710**
Features of the oceanographic regime in Prydz Bay (Feb. 1973) [1978, rus] **J-20740**
Nutrients, plankton, and circulation around New Zealand [1978, eng] **J-20805**
Effects of transverse ridges on circumpolar oceanic flow [1977, eng] **J-20842**
Observations on the southwest Indian/Antarctic Ocean [1977, eng] **J-21024**
Ross Ice Shelf sea temperature [1979, eng] **J-21097**
Circulation and melting beneath the Ross Ice Shelf [1979, eng] **J-21098**
Tritium and carbon-14 in seawater under the Ross Ice Shelf [1979, eng] **J-21100**
Deep antarctic convection west of Maud Rise [1978, eng] **J-21130**
Isohaline thermoclines in the southeast Pacific Ocean [1978, eng] **J-21131**
Circumpolar countercurrent of the Southern Ocean [1978, eng] **J-21166**
Scattering of Rossby waves by partial barriers [1972, eng] **J-21205**
History of sedimentation and abyssal circulation on the Greater Antilles Outer Ridge [1974, eng] **J-21212**
Observations of antarctic polar front motions in a deep water expression [1979, eng] **J-21227**
Structure of the Antarctic Circumpolar Current in the Drake Passage [1978, rus] **J-21355**
Polar Front zone in the western Scotia Sea, winter 1977 [1978, eng] **J-21547**
Antarctic Circumpolar Current and topography [1978, eng] **J-21548**
Eddies and ridges in the thermal structure south of New Zealand [1978, eng] **J-21550**
Physical oceanography of the Ross Sea [1978, eng] **J-21553**
South Atlantic oceanography [1978, eng] **J-21555**
Circulation features of the Antarctic atmosphere and the Southern Ocean [1978, rus] **K-21694**

CURRENTS

Evaluation of possible United States involvement in an antarctic krill fishery [1976, eng] **B-19895**
Reasons for incursions of female sperm whales into antarctic waters [1973, rus] **B-20581**
Effect of hydrological conditions in the Scotia Sea on aggregations of baleen whales [1973, rus] **B-20584**
Displaced antarctic diatoms in the southwestern and central Pacific [1976, eng] **B-21060**
Effect of antarctic ice cover on Chilean marine faunas [1978, eng] **B-21516**
Ice-rafted detritus and paleotemperature [1977, eng] **E-19259**
Sedimentation processes and acoustic stratigraphy in the Bellingshausen Basin [1977, eng] **E-19264**
Pleistocene manganese pavement production in the Tasman Sea [1972, eng] **E-19377**
Cretaceous *Islas Orcadas* core from the Falkland Plateau [1977, eng] **E-19635**
Geochemistry of sediments in the western central Atlantic, DSDP Leg 39 [1977, eng] **E-19849**
General synthesis of Central and South Atlantic drilling results, Leg 39, Deep Sea Drilling Project [1977, eng] **E-19851**
Deep-sea manganese nodules in the stratigraphic record: evidence from DSDP cores [1978, eng] **E-20360**
Icebergs in the Southern Ocean [1976, eng] **F-20247**
Distribution, movement and melt rates of antarctic icebergs [1978, eng] **F-20462**
Environmental factors along an iceberg tow route in the Indian Ocean [1978, eng] **F-20471**
Delivery of icebergs to Saudi Arabia—an assessment [1978, eng] **F-20479**
Eleven year chronicle of one of the world's most gigantic icebergs [1978, eng] **F-20881**
Structure and transport of the Antarctic Circumpolar Current at Drake Passage from short-term measurements [1977, eng] **J-19318**
Variability of deep flow in the Drake Passage [1977, eng] **J-19319**
Numerical simulation of the baroclinic world ocean [1977, rus] **J-19369**
Water budget of Drake Passage and Scotia Sea basin [1977, eng] **J-19373**
Dynamics of the Antarctic Circumpolar Current [1969, eng] **J-19390**
Importance of ocean upwelling [1974, eng] **J-19395**
Oceanographic data of the 17th JARE 1975-1976 [1977, eng] **J-19528**
Water circulation along an Antarctica-Africa profile [1974, rus] **J-19590**
FDRAKE 77 [1977, eng] **J-19624**
Moored temperature time series in the Polar Front Zone during FDRAKE, 1976 [1977, eng] **J-19625**
Stirring processes within the antarctic Polar Front Zone [1977, eng] **J-19626**
Soviet-American research aboard RV *Professor Zubov* [1977, eng] **J-19627**
Effect of meridional circulation in large scale current topography interactions [1977, eng] **J-19630**
Deep currents in the northwestern part of the Argentine Basin [1977, eng] **J-19631**
Structure of large-scale circulation of Atlantic Ocean waters [1977, eng] **J-19741**
Attempt at compiling a schematic map of exogenetic geomorphological factors acting on the World ocean bottom [1977, rus] **J-19742**
Problem of conjugation of currents in the Arctic and Southern Oceans [1977, eng] **J-19785**
Tidal currents in the central Weddell Sea [1977, eng] **J-19809**
Satellite-tracked drifters between Africa and Antarctica [1978, eng] **J-19812**
Changes in the hydrological characteristics of the Southern Ocean [1977, eng] **J-20025**
Study of the east-west antarctic current by means of icebergs tracked by the EOLE satellite [1977, eng] **J-20026**
Currents and water masses in the vicinity of Drake Passage [1977, eng] **J-20027**
Circulation across the ice shelf edge in McMurdo Sound, Antarctica [1977, eng] **J-20028**
International Southern Ocean studies [1977, eng] **J-20032**
Ageing and circulation of West Atlantic Deep Water [1977, eng] **J-20080**

Observations of the Antarctic Polar Front by a moored array during FDRAKE-76 [1977, eng] **J-20098**
Combined effects of wind stress and topography in a two-layer model of the Southern Ocean [1978, eng] **J-20162**
Contributions to the dynamics of the Antarctic Circumpolar Current. 2. Integral relationships [1975, eng] **J-20244**
Topographic effect on the deep circulation and the abyssal oxygen distribution [1978, eng] **J-20249**
Oceanographic data collected aboard R/V *T.G. Thompson* during FDRAKE 76, Legs I and II [1978, eng] **J-20413**
Large-scale circulation of the world ocean [1977, rus] **J-20446**
Bottom water flow through the Kane Gap, Sierra Leone Rise, Atlantic Ocean [1975, eng] **J-20508**
Oceanographic data from the Nemo Ross Sea Expedition, 1972 [1974, eng] **J-20523**
Large-scale relative dynamic topography of the Southern Ocean [1978, eng] **J-20533**
Cyclonic eddy in the Antarctic Circumpolar Current south of Australia [1978, eng] **J-20553**
POLEX-South program in 1975 and 1976 [1978, rus] **J-20634**
Horizontal circulation in the Drake Passage [1978, rus] **J-20636**
Current measurement by means of buoys in the Drake Passage [1978, rus] **J-20637**
Observations of water temperature variations in the Drake Passage, summer 1976 [1978, rus] **J-20639**
Drake Passage water masses in the summer [1978, rus] **J-20640**
Water mass structure and geostrophic currents on the Antarctica-Africa profile [1978, rus] **J-20650**
Model of narrow jets in a zonal ocean [1978, eng] **J-20709**
Outcrops, currents and facies in the east Pacific antarctic zone [1977, fre] **J-20863**
Biogeographic aspects of the distribution and dynamics of water masses off the South American coast [1978, eng] **J-20933**
Circumpolar countercurrent of the Southern Ocean [1978, eng] **J-21166**
Bottom topography effects on ocean currents [1972, eng] **J-21196**
History of sedimentation and abyssal circulation on the Greater Antilles Outer Ridge [1974, eng] **J-21212**
Buoy and ship examination of the subtropical convergence south of Western Australia [1978, eng] **J-21233**
Temperature and profiling current meter measurements in the central Scotia Sea [1978, eng] **J-21343**
Structure of the Antarctic Circumpolar Current in the Drake Passage [1978, rus] **J-21355**
Oceanographic data collected aboard R/V *Melville* during January-February 1977 as a part of FDRAKE 77 [1978, eng] **J-21379**
Oceanographic studies in relation to krill fisheries [1978, ger] **J-21445**
Surface layer kinematics of the circumpolar current as inferred from Nimbus 6 [1978, eng] **J-21546**
Antarctic Circumpolar Current and topography [1978, eng] **J-21548**
FDRAKE 77 *Yelcho* [1978, eng] **J-21549**
International Weddell Sea Oceanographic Expedition, 1978 [1978, eng] **J-21552**
Physical oceanography of the Ross Sea [1978, eng] **J-21553**
Reduction in the South Pacific zone of high bottom current activity [1978, eng] **J-21568**
Effect of induced currents in the sea on magnetic bays [1978, eng] **K-20285**

EXPLOITATION

Antarctic Expedition 1975-1976 of the Federal Republic of Germany [1978, ger] **B-21443**
Fishery biological investigations [1978, ger] **B-21447**
Behavior of krill *(Euphausia superba* Dana) [1978, ger] **B-21450**
Problems of exploitation and conservation of the ocean [1977, rus] **J-20517**
Modelling the exclusive economic zone enforcement problem [1978, eng] **J-21285**
Oceanographic studies in relation to krill fisheries [1978, ger] **J-21445**

TEMPERATURE

Freezing resistance in some Antarctic fishes [1968, eng] **B-19272**
Foraminifera and radiolaria in sediments of the Scotia and Weddell Seas [1967, eng] **B-19519**
Physiology of cold adaptation in polar marine poikilotherms [1977, eng] **B-20041**
Primary productivity and estimates of potential yields of the Southern Ocean [1978, eng] **B-20204**
Effect of hydrological conditions in the Scotia Sea on aggregations of baleen whales [1973, rus] **B-20584**
Biometry of *Globigerina* [1977, eng] **E-19418**
Paleoclimatic history in deep-sea cores [1972, eng] **E-19423**
Effect of glacial ice melting on the Antarctic Surface Water [1979, eng] **E-21657**
Heat, mass, and momentum transfer effects on iceberg ablation [1978, eng] **F-20463**
Environmental factors along an iceberg tow route in the Indian Ocean [1978, eng] **F-20471**
Melting of antarctic icebergs [1978, eng] **F-20705**
Eleven year chronicle of one of the world's most gigantic icebergs [1978, eng] **F-20881**
Large-scale numerical model of sea ice [1979, eng] **F-21132**
Model for melting of ice in sea water [1979, eng] **F-21226**
New data on climatic trends [1977, eng] **I-19343**
Results of meteorological observations [1968, eng] **I-20342**
Antarctic polar front in the Drake Passage [1978, rus] **I-20638**
Relationship between the antarctic oceanic polar front and free-atmosphere processes [1978, rus] **I-20646**
Some results of the CLIMAP project [1978, eng] **I-21108**
Glacial development and temperature trends in the Antarctic and in South America [1978, eng] **I-21385**
Cenozoic and Late Mesozoic paleooceanographic and paleoglacial history [1977, eng] **J-19261**
Antarctic Polar Frontal Zone from Australia to the Drake Passage [1977, eng] **J-19320**
Oceanographic data of the 17th JARE 1975-1976 [1977, eng] **J-19528**
On the abyssal temperatures of the World Oceans [1968, eng] **J-19544**
Ross Ice Shelf Project: physical oceanography [1977, eng] **J-19621**
Oceanographic data from McMurdo Sound [1977, eng] **J-19622**
FDRAKE 77 [1977, eng] **J-19624**
Moored temperature time series in the Polar Front Zone during FDRAKE, 1976 [1977, eng] **J-19625**
Stirring processes within the antarctic Polar Front Zone [1977, eng] **J-19626**
Soviet-American research aboard RV *Professor Zubov* [1977, eng] **J-19627**
Water mass renewal in the subantarctic zone [1977, eng] **J-19628**
Temperature sections from supply vessels [1977, eng] **J-19629**
Basin waters of the Bransfield Strait [1978, eng] **J-19913**
Late Quaternary paleoceanographic events in the southeast Indian Ocean [1976, eng] **J-19914**
Changes in the hydrological characteristics of the Southern Ocean [1977, eng] **J-20025**
Oceanographic station data collected aboard R/V *Melville* during FDRAKE 75 [1977, eng] **J-20078**
Observations of the Antarctic Polar Front by a moored array during FDRAKE-76 [1977, eng] **J-20098**
Formation and interleaving of abyssal water masses off Wilkes Land, Antarctica [1978, eng] **J-20161**
Seventh voyage of the R/V *Ob'* [1968, eng] **J-20327**
Activities of the *Ob'*, 1961-62 [1968, eng] **J-20328**
Oceanographic data collected aboard R/V *T.G. Thompson* during FDRAKE 76, Legs I and II [1978, eng] **J-20413**
Variability of the antarctic polar frontal zone [1978, eng] **J-20532**
Seasonal and annual variations in water temperature and salinity near South Georgia, 1925-1937 [1977, eng] **J-20617**
Observations of water temperature variations in the Drake Passage, summer 1976 [1978, rus] **J-20639**
Thermal structure of antarctic continental slope waters around Molodezhnaya Station [1978, rus] **J-20649**
Survey of worldwide sea surface temperature fronts [1978, eng] **J-20706**
Climatic characteristics of the Antarctic Polar Front Zone [1978, eng] **J-20707**
Fine structure in the Antarctic Polar Front Zone [1978, eng] **J-20708**
Light-scattering observations in frontal zones [1978, eng] **J-20710**
Features of the oceanographic regime in Prydz Bay (Feb. 1973) [1978, rus] **J-20740**
Hydrological characteristics and transequatorial transport in the west Indian Ocean [1976, eng] **J-20787**
Southern ocean temperature gradient near 2C [1977, eng] **J-21025**
Subantarctic mode water [1977, eng] **J-21026**

Ocean

TEMPERATURE *(cont.)*

Sea-surface temperature, salinity, and density of the Pacific Ocean in summer and in winter [1969, eng] **J-21073**
Ross Ice Shelf sea temperature [1979, eng] **J-21097**
Circulation and melting beneath the Ross Ice Shelf [1979, eng] **J-21098**
Deep antarctic convection west of Maud Rise [1978, eng] **J-21130**
Historical methods of temperature measurement in arctic and antarctic waters [1978, eng] **J-21150**
Observations of antarctic polar front motions in a deep water expression [1979, eng] **J-21227**
Buoy and ship examination of the subtropical convergence south of Western Australia [1978, eng] **J-21233**
Temperature and profiling current meter measurements in the central Scotia Sea [1978, eng] **J-21343**
Oceanographic data collected aboard R/V *Melville* during January-February 1977 as a part of FDRAKE 77 [1978, eng] **J-21379**
Oceanographic studies in relation to krill fisheries [1978, ger] **J-21445**
Long-term global sea surface temperature fluctuations and their possible influence on atmospheric CO2 concentrations [1978, eng] **J-21480**
Surface layer kinematics of the circumpolar current as inferred from Nimbus 6 [1978, eng] **J-21546**
Polar Front zone in the western Scotia Sea, winter 1977 [1978, eng] **J-21547**
FDRAKE 77 *Yelcho* [1978, eng] **J-21549**
Eddies and ridges in the thermal structure south of New Zealand [1978, eng] **J-21550**
Temperature and salinity fields under the Ross Ice Shelf [1978, eng] **J-21551**
International Weddell Sea Oceanographic Expedition, 1978 [1978, eng] **J-21552**
Physical oceanography of the Ross Sea [1978, eng] **J-21553**
South Atlantic oceanography [1978, eng] **J-21555**
Heat flow in the Weddell Sea [1978, eng] **J-21572**
See also: Sea water/Thermal properties

WATER MASSES

Fall meeting 1977, abstracts [1977, eng] **A-21363**
Phytoplankton within the Antarctic Convergence [1969, eng] **B-19399**
Abyssal benthonic foraminifera [1978, eng] **B-20538**
Carbon isotope ratio of marine plankton related to surface water masses [1978, eng] **B-20959**
Clay minerals in southeast Indian Ocean sediments [1977, eng] **E-19262**
Geologic history of the Maurice Ewing Bank of the Falkland Plateau [1977, eng] **E-19263**
Biometry of *Globigerina* [1977, eng] **E-19418**
Authigenic gypsum in marine sediments [1978, eng] **E-20359**
Recent planktonic foraminifera [1977, eng] **E-20564**
Studies of deep-sea benthonic foraminifera in the southeast Indian Ocean [1978, eng] **E-21570**
Effect of glacial ice melting on the Antarctic Surface Water [1979, eng] **E-21657**
Major features of oceanographic development interpreted from microfossils [1977, eng] **J-19257**
Antarctic Polar Frontal Zone from Australia to the Drake Passage [1977, eng] **J-19320**
Water budget of Drake Passage and Scotia Sea basin [1977, eng] **J-19373**
International Weddell Sea Oceanographic Expedition, 1976: tritium results [1977, eng] **J-19620**
Ross Ice Shelf Project: physical oceanography [1977, eng] **J-19621**
Moored temperature time series in the Polar Front Zone during FDRAKE, 1976 [1977, eng] **J-19625**
Water mass renewal in the subantarctic zone [1977, eng] **J-19628**
Basin waters of the Bransfield Strait [1978, eng] **J-19913**
Late Quaternary paleoceanographic events in the southeast Indian Ocean [1976, eng] **J-19914**
Sedimentation and Antarctic Bottom Water circulation in the southeast Indian Ocean [1978, eng] **J-19992**
Antarctic water masses and circulation [1977, eng] **J-20023**
Antarctic oceanographic zonation [1977, eng] **J-20024**
Currents and water masses in the vicinity of Drake Passage [1977, eng] **J-20027**
Water masses and circulation in the Weddell Sea [1977, eng] **J-20029**
Antarctic Bottom Water formation in the Weddell Sea [1977, eng] **J-20030**
Some models of bottom water formation [1977, eng] **J-20031**
International Southern Ocean studies [1977, eng] **J-20032**
Thermohaline convection in the vicinity of an ice shelf [1977, eng] **J-20034**
Ageing and circulation of West Atlantic Deep Water [1977, eng] **J-20080**
Observations of the Antarctic Polar Front by a moored array during FDRAKE-76 [1977, eng] **J-20098**
Formation and interleaving of abyssal water masses off Wilkes Land, Antarctica [1978, eng] **J-20161**
Antarctic Intermediate water in the intertropical Atlantic [1975, fre] **J-20197**
Pacific Ocean bottom water [1976, rus] **J-20229**
Bottom water flow through the Kane Gap, Sierra Leone Rise, Atlantic Ocean [1975, eng] **J-20508**
Silica density of near-bottom Atlantic waters [1974, eng] **J-20519**
Cyclonic eddy in the Antarctic Circumpolar Current south of Australia [1978, eng] **J-20553**
Drake Passage water masses in the summer [1978, rus] **J-20640**
Thermal structure of antarctic continental slope waters around Molodezhnaya Station [1978, rus] **J-20649**
Water mass structure and geostrophic currents on the Antarctica-Africa profile [1978, rus] **J-20650**
Hydrological characteristics and transequatorial transport in the west Indian Ocean [1976, eng] **J-20787**
Biogeographic aspects of the distribution and dynamics of water masses off the South American coast [1978, eng] **J-20933**
Cenozoic hiatuses in pelagic sediments [1978, eng] **J-21020**
Water characteristics of the Southern Ocean south of the Polar Front [1977, eng] **J-21023**
Observations on the southwest Indian/Antarctic Ocean [1977, eng] **J-21024**
Subantarctic mode water [1977, eng] **J-21026**
Anatomy of the Antarctic Polar Front in the Drake Passage [1978, eng] **J-21048**
Tritium distributions in Weddell Sea water masses [1978, eng] **J-21049**
Deep antarctic convection west of Maud Rise [1978, eng] **J-21130**
Isohaline thermoclines in the southeast Pacific Ocean [1978, eng] **J-21131**
Direct observation of the oceanic CO2 increase [1978, eng] **J-21170**
History of sedimentation and abyssal circulation on the Greater Antilles Outer Ridge [1974, eng] **J-21212**
Observations of antarctic polar front motions in a deep water expression [1979, eng] **J-21227**
On the chlorophyll content in the surface water of the Indian and the Antarctic Oceans [1963, eng] **J-21278**
Structure of the Antarctic Circumpolar Current in the Drake Passage [1978, rus] **J-21355**
Antarctic Circumpolar Current and topography [1978, eng] **J-21548**
Differences between AAIW in the southeast Pacific and the southwest Atlantic [1978, eng] **J-21554**
Reduction in the South Pacific zone of high bottom current activity [1978, eng] **J-21568**

Oceanography

Islas Orcadas cruise 11, Buenos Aires to Cape Town [1977, eng] **E-19634**
Oceanic micropalaeontology [1977, eng] **E-20563**
Islas Orcadas cruise 16 [1978, eng] **E-21558**
Ross Ice Shelf Project [1979, eng] **F-21094**
Oceanography and sedimentology of Drake Passage, Antarctica [1968, eng] **J-19270**
International Weddell Sea Oceanographic Expedition, 1977 [1977, eng] **J-19619**
Islas Orcadas cruise 12: Cape Town to Buenos Aires [1977, eng] **J-19633**
Polar Oceans conference proceedings [1977, eng] **J-20022**
Polar oceans: similarities and differences in their physical oceanography [1978, eng] **J-20203**
Results and prospects of Soviet research in the Southern Ocean [1978, rus] **J-20676**
Voyage of discovery [1977, eng] **J-21022**

See also: Paleoceanography

INSTRUMENTS
FDRAKE 77 [1977, eng] **J-19624**
Satellite-tracked drifters between Africa and Antarctica [1978, eng] **J-19812**
Observations of the Antarctic Polar Front by a moored array during FDRAKE-76 [1977, eng] **J-20098**
Current measurement by means of buoys in the Drake Passage [1978, rus] **J-20637**
Historical methods of temperature measurement in arctic and antarctic waters [1978, eng] **J-21150**
Surface layer kinematics of the circumpolar current as inferred from Nimbus 6 [1978, eng] **J-21546**
Polar Front zone in the western Scotia Sea, winter 1977 [1978, eng] **J-21547**
FDRAKE 77 *Yelcho* [1978, eng] **J-21549**

MAPS AND CHARTS
Wilkes Expedition [1971, eng] **D-20019**
Environmental inventories: Antarctic area [1978, eng] **I-20425**
Attempt at compiling a schematic map of exogenetic geomorphological factors acting on the World ocean bottom [1977, rus] **J-19742**
Circumpolar countercurrent of the Southern Ocean [1978, eng] **J-21166**
Inventory of archived data [1969, eng] **J-21213**

MODELS
Some models of bottom water formation [1977, eng] **J-20031**
Formation and interleaving of abyssal water masses off Wilkes Land, Antarctica [1978, eng] **J-20161**
Combined effects of wind stress and topography in a two-layer model of the Southern Ocean [1978, eng] **J-20162**
Modeling of tracers: salinity and oxygen [1978, eng] **J-20185**
Antarctic Intermediate water in the intertropical Atlantic [1975, fre] **J-20197**
Normal modes of the world ocean, Part 1 [1978, eng] **J-20248**
Topographic effect on the deep circulation and the abyssal oxygen distribution [1978, eng] **J-20249**
Silica in the near-bottom Atlantic [1975, eng] **J-20506**
Silica density of near-bottom Atlantic waters [1974, eng] **J-20519**
Studying Southern Ocean circulation [1978, rus] **J-20635**
Model of narrow jets in a zonal ocean [1978, eng] **J-20709**
Effects of transverse ridges on circumpolar oceanic flow [1977, eng] **J-20842**
Bottom topography effects on ocean currents [1972, eng] **J-21196**

Operations
See: Cargo operations; Logistics; Search and rescue; Submarine operations; Transportation; Traverse operations

Optical phenomena
See under: Atmosphere

Optical properties
See under: Sea water

Ozone
Ozone measurements at British Antarctic Survey stations [1977, eng] **I-19479**
Meteorological observations at Showa, 1974 [1977, eng] **I-19526**
Antarctic meteorological data. Special volume [1978, eng] **I-19945**
Satellite and ground-based measurements of total ozone [1978, eng] **I-20626**
Pilot study of concomitant changes in total ozone and atmospheric general circulation [1978, eng] **I-21004**
Long-term effect on the ozone layer of nitrogen oxides produced by thermonuclear explosions in the atmosphere [1978, eng] **I-21275**
Measurements of surface ozone at Mirnyy, Antarctica [1978, ger] **I-21290**
Geophysical monitoring for climatic change, No.6. Summary report 1977 [1978, eng] **I-21405**
Vertical ozone distribution on a global scale [1978, eng] **I-21482**
Geophysical monitoring for climatic change at the South Pole, 1977 [1978, eng] **I-21618**
Importance of the Antarctic in atmospheric sciences [1977, eng] **K-19480**

Pack ice
Phytoplankton studies in the water column and in the pack ice of the Weddell Sea [1977, eng] **B-19616**
Antarctic pack ice cover variations [1977, eng] **F-19683**
Sea ice studies in the Weddell Sea region aboard USCGC *Burton Island* [1977, eng] **F-19706**
East Antarctic pack ice [1977, rus] **F-19841**
Icebergs in the Southern Ocean [1976, eng] **F-20247**
U.S. Navy global ice analysis and forecasting [1978, eng] **F-20459**
Features of summer ice processes in the Pacific sector of Antarctica [1978, rus] **F-20648**
Recent changes in snow and ice [1978, eng] **F-21190**
New data on climatic trends [1977, eng] **I-19343**
Effects of human activities on global climate; a summary, with consideration of the implications of a possibly warmer earth [1977, eng] **I-20957**
Influence of Southern Ocean on climate [1978, eng] **I-21106**
Global influences of mankind on the climate [1978, eng] **I-21191**
Ross Ice Shelf Project: physical oceanography [1977, eng] **J-19621**

BREAKUP
Ice conditions in the Leningradskaya Station area [1978, rus] **F-20763**
Sea ice and ice algae relationships in the Weddell Sea [1978, eng] **F-21544**

CHEMISTRY
Salt and phase composition of pack ice during growth and destruction [1978, rus] **F-20723**
Tritium and carbon-14 distributions in McMurdo Sound, 1977 [1978, eng] **J-21545**

DESTRUCTION
Conditions for ship unloading near Novolazarevskaya Station [1977, rus] **G-19887**

DISTRIBUTION
Use of infrared and visible imagery for sea ice monitoring [1978, eng] **F-21066**

DRIFTING
Features of the formation of the Balleny ice massif and drift of the *Ob'* [1978, rus] **F-20738**

FORMATION
Structure of shore ice along the Amery Ice Shelf [1977, eng] **F-19404**
Characteristics of Antarctic coastal pack ice formation [1978, rus] **F-20722**
Salt and phase composition of pack ice during growth and destruction [1978, rus] **F-20723**

MECHANICAL PROPERTIES
Results of navigability trials of antarctic ice by the *Ob'* [1978, rus] **G-20739**

MORPHOLOGY
Using side-looking radar for studying ice undersurfaces [1978, rus] **F-20616**

PHYSICAL PROPERTIES
Compressive strength of antarctic summer shore ice [1977, eng] **F-19406**

RADIATION
Short-wave radiation attenuation by ice and snow [1977, rus] **F-21138**

THAWING
Salt and phase composition of pack ice during growth and destruction [1978, rus] **F-20723**

THICKNESS
Ice conditions in the Leningradskaya Station area [1978, rus] **F-20763**
Results of navigability trials of antarctic ice by the *Ob'* [1978, rus] **G-20739**

VARIATIONS
Pack ice edge in summer [1977, eng] **F-20095**
Role of the polar regions in global climate change [1978, eng] **I-20202**

Packaging

Antarctic operations manual [1978, eng] **G-20778**

Paleobotany

Palynological studies in South Georgia: 1. Pollen and spore morphology of the native vascular species [1976, eng] **B-19550**

An unusual osmundaceous specimen from Antarctica [1978, eng] **B-21396**

Coal forming elements in permineralized peat from Mountain Augusta (Queen Alexandra Range) [1977, eng] **E-19662**

Intercontinental correlation by conchostracans and palynomorphs [1977, eng] **E-19669**

Palynomorph preservation in the Beacon Supergroup of the Transantarctic Mountains [1977, eng] **E-19670**

Thalassiosira torokina n.sp. (diatom) and its significance in Late Cenozoic biostratigraphy [1977, eng] **E-19671**

Extraction of diatoms from glacial sediments [1977, eng] **E-19672**

Carboniferous and Permian palynostratigraphy in Australia and Antarctica: a review [1977, eng] **E-20396**

Palynostratigraphy of the Victoria group of South Victoria Land, Antarctica [1977, eng] **E-20756**

Additional postglacial pollen diagram from Patagonia Occidental [1972, eng] **E-20905**

Postglacial pollen diagrams from South Georgia (sub-Antarctic) and West Falkland Island (South Atlantic) [1978, eng] **E-21215**

Report on an archaeological expedition in Magallanes (Dec. 14, 1976—Jan. 6, 1977) [1976, spa] **E-21329**

Palynological study of triassic samples from the Beardmore Glacier area in Antarctica [1974, eng] **E-21485**

Geological studies in the McMurdo region [1978, eng] **E-21506**

Fresh-water diatoms from perched deltas in Taylor Valley, Antarctica [1978, eng] **E-21517**

Radiocarbon studies of atmospheric CO2 [1972, eng] **I-19845**

Tertiary climatic evolution and vegetation history in the southeast Indian Ocean region [1978, eng] **I-20184**

Glacial development and temperature trends in the Antarctic and in South America [1978, eng] **I-21385**

Paleoceanography

Guembelitria samwelli Jenkins, a new Oligocene species [1978, eng] **B-20537**

Development of planktonic biogeography in the southern ocean during the Cenozoic [1978, eng] **B-21562**

Oceanic micropalaeontology [1977, eng] **E-20563**

Investigations of Quaternary climate based on planktonic foraminifera [1977, eng] **E-20565**

Sedimentological clues to palaeo-oceanography [1977, eng] **E-20569**

Test size variation in Globigerina bulloides in response to Quaternary palaeoceanographic changes [1978, eng] **E-20631**

Paleontology and paleoenvironment of the Southwest Atlantic Ocean Basin [1978, eng] **E-21564**

Paleoclimatology

Civilization under the ice; on the threshold of the discovery of the century [1974, ita] **A-21358**

Effect of antarctic ice cover on Chilean marine faunas [1978, eng] **B-21516**

Ice-rafted detritus and paleotemperature [1977, eng] **E-19259**

Southeast Indian Ocean: upper Pleistocene calcareous nannofossil zones and paleoclimatic history [1975, eng] **E-19281**

Biostratigraphy and paleoecology of Neogene and Oligocene silicoflagellates [1974, eng] **E-19282**

Paleoclimatic history in deep-sea cores [1972, eng] **E-19423**

Geology of Antarctica: a review [1977, eng] **E-19476**

Early Tertiary geology of the Indian Ocean region [1978, eng] **E-19874**

Evolution of the earth's cryosphere [1976, rus] **E-19972**

Paleohydrology of Taylor Valley, Antarctica inferred from pore ice in permafrost core [1977, eng] **E-19999**

Termination of last interglacial episode and the Wilson Antarctic surge hypothesis [1978, eng] **E-20008**

Paleoclimatic trends in Early and Middle Pliocene deep-sea sediments of the Antarctic [1978, eng] **E-20552**

Oceanic micropalaeontology [1977, eng] **E-20563**

Investigations of Quaternary climate based on planktonic foraminifera [1977, eng] **E-20565**

Sedimentological clues to palaeo-oceanography [1977, eng] **E-20569**

Test size variation in Globigerina bulloides in response to Quaternary palaeoceanographic changes [1978, eng] **E-20631**

Dating of geochemical events in Lake Bonney, Antarctica, and their relation to glacial and climate changes [1977, eng] **E-20757**

Application of transfer functions to Indian Ocean planktonic foraminifera [1978, eng] **E-20803**

Comparison of radiolarian/planktonic foraminiferal paleooceanography of the subantarctic Indian Ocean [1978, eng] **E-20804**

Significance of the Pleistocene occurrence of Helotholus vema in high-latitude sediments [1977, eng] **E-20860**

Additional postglacial pollen diagram from Patagonia Occidental [1972, eng] **E-20905**

Gondwanan glaciation, cyclothems, continental positioning, and climate change [1978, eng] **E-21005**

Late Cenozoic oxygen and carbon isotopic history and volcanic ash stratigraphy [1979, eng] **E-21180**

Late Neogene chronostratigraphy, biostratigraphy, biochronology and paleoclimatology [1973, eng] **E-21195**

Paleoclimatic applications of mean-size variations in *Globigerina bulloides* d'Orbigny [1978, eng] **E-21571**

Influence of climatic and glaciological factors on paleotemperature of continental ice sheets [1976, rus] **F-19973**

Antarctic ice and history of world climate [1975, spa] **F-20260**

Inland ice sheet thinning due to Holocene warmth [1978, eng] **F-20572**

Effect of antarctic glaciation on global climate [1978, rus] **F-20806**

Symposium on the History of Antarctic Glaciation [1978, rus] **F-21392**

Paleoglaciology in Antarctica [1978, rus] **F-21696**

Climatic change, orography and geostrophic motion [1975, eng] **I-19414**

Tertiary climatic evolution and vegetation history in the southeast Indian Ocean region [1978, eng] **I-20184**

Climatic change and variability: a southern perspective [1978, eng] **I-21105**

Cenozoic climates: Antarctica and the Southern Ocean [1978, eng] **I-21107**

Climatic change [1978, eng] **I-21186**

Geological-geophysical framework of ice ages [1978, eng] **I-21187**

Isotope studies [1978, eng] **I-21188**

Glacial development and temperature trends in the Antarctic and in South America [1978, eng] **I-21385**

Cenozoic and Late Mesozoic paleooceanographic and paleoglacial history [1977, eng] **J-19261**

Deep sea drilling contributions to antarctic evolution studies [1977, eng] **J-19638**

Late Quaternary paleoceanographic events in the southeast Indian Ocean [1976, eng] **J-19914**

Low sea levels, droughts and mammalian extinctions [1978, eng] **J-19942**

Reduction in the South Pacific zone of high bottom current activity [1978, eng] **J-21568**

Paleomagnetism

Drift of the major continental blocks since the Devonian [1977, eng] **E-19329**

Volcanic rocks of the Chatham Islands [1977, eng] **E-19805**

Significance of the Pleistocene occurrence of Helotholus vema in high-latitude sediments [1977, eng] **E-20860**

Geologic studies in the northern Antarctic Peninsula [1978, eng] **E-21505**

Japanese scientific activities in Victoria Land 1977-1978 [1978, eng] **E-21507**

Northward motion of India since the Late Cretaceous [1978, eng] **L-19802**

Revised palaeomagnetic data for Australia and Gondwanaland [1977, eng] **L-20217**

Paleomagnetism of Ordovician lamprophyres from Taylor Valley [1977, eng] **L-20266**

Towards a more certain reconstruction of Gondwanaland [1977, eng] **L-20278**

What happened to the high-latitude palaeomagnetic poles [1978, eng] **L-20286**

Paleomagnetic studies on DVDP cores from Taylor Valley [1978, eng] **L-20364**

Tentative paleocontinental maps for the Early Phanerozoic and Proterozoic [1978, eng] **L-20688**

Paleomagnetic results, Antarctic Peninsula [1978, eng] **L-20862**

Paleomagnetism of the Alcaparrosa Formation, Argentina [1978, eng] L-21230

Paleontology

Foraminifera and radiolaria in sediments of the Scotia and Weddell Seas [1967, eng] B-19519
Bivalve mollusc *Limatula:* a review [1978, eng] B-20101
Ecology and biogeographic patterns of planktonic foraminifera [1977, eng] B-20102
Struthiolaridae (Gastropoda) fauna from Seymour Island, Antarctic Peninsula [1976, eng] B-20397
Guembelitria samwelli Jenkins, a new Oligocene species [1978, eng] B-20537
Abyssal benthonic foraminifera [1978, eng] B-20538
Penguin and seal carcasses on Black Island [1978, eng] B-20592
Early mammals in South America [1978, eng] B-20918
Paleodistribution of marine isopods and continental drift [1979, eng] B-21394
Contribution to the knowledge of the Decapod Crustacea of Tierra del Fuego with some zoogeographical observations [1977, spa] B-21429
Development of planktonic biogeography in the southern ocean during the Cenozoic [1978, eng] B-21562
Geologic history of the Maurice Ewing Bank of the Falkland Plateau [1977, eng] E-19263
Southeast Indian Ocean: upper Pleistocene calcareous nannofossil zones and paleoclimatic history [1975, eng] E-19281
Biostratigraphy and paleoecology of Neogene and Oligocene silicoflagellates [1974, eng] E-19282
Geochemistry of antarctic sediments [1975, eng] E-19283
Biometry of *Globigerina* [1977, eng] E-19418
Test ultrastructure of some calcareous foraminifera [1977, eng] E-19419
Paleoclimatic history in deep-sea cores [1972, eng] E-19423
Chlamys delicatula and *Jacquinotia edwardsii* [1977, eng] E-19465
Fossil occurrence of *Jacquinotia edwardsii* [1977, eng] E-19466
Cretaceous *Islas Orcadas* core from the Falkland Plateau [1977, eng] E-19635
Late Mesozoic-Cenozoic history of the eastern Falkland Plateau [1977, eng] E-19636
Basal sediment ages of *Islas Orcadas* cruise 7 piston cores [1977, eng] E-19637
Antarctic and southernmost South American fossil echinoids [1977, eng] E-19643
Marine microfossils on the McMurdo Ice Shelf [1977, eng] E-19644
Geologic studies in the South Orkney Islands [1977, eng] E-19655
Analysis of permafrost cores from antarctic dry valleys [1977, eng] E-19664
Cynodont reptiles from the Triassic of Antarctica [1977, eng] E-19667
Paleontological investigations in the Ellsworth Mountains [1977, eng] E-19668
Intercontinental correlation by conchostracans and palynomorphs [1977, eng] E-19669
History of sediment lithofacies in the South Atlantic Ocean [1977, eng] E-19852
Early Tertiary geology of the Indian Ocean region [1978, eng] E-19874
Biostratigraphy of Seymour Island, Antarctica [1978, eng] E-19939
Last-abundant-appearance of a diatom in the Subantarctic [1978, eng] E-19988
Late Neogene diatom biostratigraphy and paleoecology of the dry valleys and McMurdo Sound, Antarctica [1977, eng] E-19998
Cenozoic subsurface micropaleontology and geology of eastern Taylor Valley, Antarctica [1977, eng] E-20000
Paleoenvironmental analysis and correlation of a Cretaceous *Islas Orcadas* core from the Falkland Plateau, Southwest Atlantic [1977, eng] E-20137
New giant penguin from the Eocene of Australia [1974, eng] E-20141
Late Cambrian Brachiopoda, Mollusca, and Trilobita from northern Victoria Land, Antarctica [1976, eng] E-20142
Annotated bibliography of the paleontology of lesser Antarctica and the Scotia Ridge [1977, eng] E-20176
Argentine geological research on James Ross Island [1975, spa] E-20251
Spreading history of the eastern Indian Ocean [1978, eng] E-20529
Three new species of *Pulvinites* [1978, eng] E-20547
Paleoclimatic trends in Early and Middle Pliocene deep-sea sediments of the Antarctic [1978, eng] E-20552
Oceanic micropalaeontology [1977, eng] E-20563
Recent planktonic foraminifera [1977, eng] E-20564
Investigations of Quaternary climate based on planktonic foraminifera [1977, eng] E-20565
Selective dissolution of Recent coccoliths in the Atlantic Ocean [1977, eng] E-20568
Sedimentological clues to palaeo-oceanography [1977, eng] E-20569
Pacific Mesozoic biogeography related to plate tectonics [1977, eng] E-20601
Test size variation in Globigerina bulloides in response to Quaternary palaeoceanographic changes [1978, eng] E-20631
Geological materials collected at RISP Site J9 [1978, eng] E-20703
Late Jurassic bivalves from Ellsworth Land [1977, eng] E-20755
Devonian palynomorphs from South Victoria Land [1977, eng] E-20759
Comparison of radiolarian/planktonic foraminiferal paleooceanography of the subantarctic Indian Ocean [1978, eng] E-20804
Fossils and the drifting continents [1976, eng] E-20846
Significance of the Pleistocene occurrence of Helotholus vema in high-latitude sediments [1977, eng] E-20860
Phosphatic nodule beds in Victoria and the late Miocene-Pliocene eustatic event [1978, eng] E-20961
Valanginian fauna in the Byers Peninsula, Livingston Island [1976, spa] E-21085
Miocene glaciomarine sediments from beneath the southern Ross Ice Shelf, Antarctica [1979, eng] E-21095
Ross sea region in the Middle Miocene: a glimpse into the past [1979, eng] E-21096
Late Cenozoic oxygen and carbon isotopic history and volcanic ash stratigraphy [1979, eng] E-21180
Late Neogene chronostratigraphy, biostratigraphy, biochronology and paleoclimatology [1973, eng] E-21195
Report on an archaeological expedition in Magallanes (Dec. 14, 1976—Jan. 6, 1977) [1976, spa] E-21329
Palynological study of triassic samples from the Beardmore Glacier area in Antarctica [1974, eng] E-21485
Stratigraphical studies in Orville Coast and eastern Ellsworth Land [1978, eng] E-21502
Palynologic studies in the Transantarctic Mountains [1978, eng] E-21510
Permian palynomorphs (Coalsack Bluff, Mt. Sirius, Mt. Picciotto) and other studies [1978, eng] E-21511
Proto-lizards from the Triassic of Antarctica [1978, eng] E-21512
New Triassic vertebrates from the Fremouw Formation [1978, eng] E-21514
Eocene nautiloid fauna from La Meseta Formation, Seymour Island [1978, eng] E-21515
Ostracoda from the Taylor Formation, the Ross Sea, and the McMurdo Sound region [1978, eng] E-21518
Basal sediment ages of Islas Orcadas cruise 11 piston-cores [1978, eng] E-21559
Basal sediment ages of ARA *Islas Orcadas* cruise 12 piston cores [1978, eng] E-21560
Amino acid racemization in *Islas Orcadas* piston core 12-77-24 [1978, eng] E-21561
Cenozoic microfossil datums in deep-sea sediments [1978, eng] E-21563
Paleontology and paleoenvironment of the Southwest Atlantic Ocean Basin [1978, eng] E-21564
Planktonic foraminiferal dissolution [1978, eng] E-21565
Modern zoogeography of antarctic planktonic microfossils [1978, eng] E-21567
Structure of *Denticula antarctica* McCollum [1978, eng] E-21569
Studies of deep-sea benthonic foraminifera in the southeast Indian Ocean [1978, eng] E-21570
Paleoclimatic applications of mean-size variations in *Globigerina bulloides* d'Orbigny [1978, eng] E-21571
Miocene glaciomarine sediments from site J-9, Ross Ice Shelf, Antarctica [1978, eng] E-21573
Miocene diatom flora from bottom cores at RISP site J-9 [1978, eng] E-21574
Late Quaternary paleogeology and paleoclimatology [1978, eng] E-21575
Piston coring aboard USCGC *Glacier* in the Ross Sea [1978, eng] E-21576

Paleontology *(cont.)*
Petrographic and paleontological study of lower Tertiary erratics from Quaternary moraines, Black Island, Antarctica [1974, eng] **E-21656**
Discovery of first Middle Cambrian trilobites in the Shackleton Range [1978, rus] **E-21701**
Glacier history of the McMurdo Sound region [1977, eng] **F-19676**
Climatic change [1978, eng] **I-21186**
Isotope studies [1978, eng] **I-21188**
Major features of oceanographic development interpreted from microfossils [1977, eng] **J-19257**
Oceanography and sedimentology of Drake Passage, Antarctica [1968, eng] **J-19270**
Carbonate compensation depth in the Southern Ocean south of Australia [1975, eng] **J-19274**
Late Quaternary paleoceanographic events in the southeast Indian Ocean [1976, eng] **J-19914**
Abyssal traces and megafauna in the Arctic and Antarctic [1978, eng] **J-21452**
Discovery of fossils at the South Pole supports the Gondwanaland hypothesis [1967, ger] **L-19433**

Parasites
Trematoda: Notocotylidae from the Sheathbill [1969, eng] **B-19339**
Trematode parasites of the Sheathbill [1968, eng] **B-19340**
Nematode and acanthocephalan parasites of the Sheathbill [1969, eng] **B-19342**
Temperature of the biotic medium and its effect on Antarctic Cercaria [1971, ger] **B-19379**
Disease and parasites in some antarctic whale stocks [1977, eng] **B-19594**
Bryozoan epizoa of *Laetmonice producta* Grube (Annelida, Polychaeta) [1972, spa] **B-19792**
Parasitic Copepoda of fishes [1965, eng] **B-19955**
Cestodes from fish, birds and whales [1969, eng] **B-19958**
Cocconeis diatom on the skin of Franciscana [1977, eng] **B-20094**
Parasites of antarctic birds and fish [1975, spa] **B-20262**
Eubrachiella antarctica on some antarctic fish [1977, eng] **B-20558**
Arthropods of Doumer Island, Antarctic Peninsula [1977, spa] **B-20912**
Trematodofauna of some mass species of fish in the southwest Atlantic [1975, rus] **B-21324**
New species of trematode parasites in fish of the Falkland-Patagonian region, southwest Atlantic Ocean [1977, rus] **B-21375**
Morphology and description a crustacean genus [1978, rus] **B-21440**
On the examination against the parasites of antarctic krill, *Euphausia superba* [1978, eng] **B-21650**

Particulates
Microparticle analysis of the 101-meter South Pole ice core [1977, eng] **F-19681**
Filtering effect of snow [1977, eng] **F-20120**
Extraction of gases and dissolved and particulate matter from ice in deep boreholes [1977, eng] **F-20123**
Variations in Greenland and Antarctic deep ice cores [1977, eng] **F-20128**
See also: Aerosols

RADIOACTIVITY
Studies on terrestrial ice cores [1978, eng] **F-21406**

Pathology
Respiratory virus transmission at McMurdo Station and Scott Base [1978, eng] **H-21606**
Respiratory virus infection late in isolation at the South Pole [1978, eng] **H-21607**
See also under: Aves-Charadriiformes; Mammalia; Mammalia-Cetacea; Mammalia-Pinnipedia; Pisces

HUMAN
Physiological adaptation and health of an expedition in Antarctica, with comment on behavioural adaptation [1977, eng] **H-19266**
Sickness in Antarctica [1963, jap] **H-19443**
Effect of isolation from environmental allergens on the allergic state [1977, eng] **H-19449**
Relationships between ascorbic acid and serum proteins of the immune system [1977, eng] **H-19488**
Respiratory virus transmission at McMurdo Station [1977, eng] **H-19591**
Lack of increased susceptibility to colds at McMurdo [1977, eng] **H-19592**
Colds and immunity at McMurdo Station and Scott Base [1977, eng] **H-19593**
Aspects of infection in isolated communities [1977, eng] **H-20245**
Vitamin A and Sir Douglas Mawson [1978, eng] **H-20514**
Antiviral resistance under antarctic winter conditions [1978, rus] **H-20774**
Immunization under antarctic conditions [1978, rus] **H-20775**
Morbidity of participants in the 13th Soviet-Antarctic Expedition [1975, eng] **H-20985**
Human adaptation to unusual living conditions [1978, rus] **H-21031**
Social and health aspects of human adaptation in polar regions [1978, rus] **H-21033**
Respiratory infections in arctic and antarctic personnel [1978, rus] **H-21040**
Clinical features of stomatological disease in antarctic personnel [1978, rus] **H-21044**
Brief geographical and medical description of Leningradskaya Station [1978, rus] **H-21047**
Morbidity among members of the 15th Soviet Antarctic Expedition [1977, rus] **H-21142**
Effect of extreme antarctic conditions on the psychosomatic state of personnel [1977, rus] **H-21145**
Identification and biological characteristics of strains of psychrophilic bacteria isolated in diarrhea of polar workers and from antarctic lake water [1978, eng] **H-21427**
Morbidity in the 19th SAE wintering party [1978, rus] **H-21466**
Human adaptation and health in Antarctica [1978, rus] **H-21707**
Human immunology under antarctic conditions [1978, rus] **H-21708**

Patterned ground
Development and significance of polygenetic features in antarctic soils [1977, eng] **E-20405**

Pedology
Plant communities near Showa related to water supply and soil [1977, jap] **B-19297**
Distribution of anaerobic bacteria [1977, jap] **B-19302**
First environmental impact monitoring amd assessment in Antarctica. The Dry Valley Drilling Project [1977, eng] **B-19314**
Baseline microbiological data for soils of the Dufek Massif [1977, eng] **B-19611**
Environmental impact in Antarctica [1978, eng] **B-19978**
Environmental appraisal for the Dry Valley Drilling Project phases III, IV, V (1973-74, 1974-75, 1975-76) [1978, eng] **B-19980**
Summary of environmental monitoring and impact assessment of the DVDP [1978, eng] **B-19982**
Animal-plant-soil nutrient relationships on Marion Island (Subantarctic) [1978, eng] **B-20165**
Terrestrial adaptations in polar regions [1978, eng] **B-20207**
Ecological investigations of yeasts in antarctic soils [1978, eng] **B-20900**
Taxonomy of antarctic bacteria from soils and air primarily of the McMurdo Station and Victoria Land dry valleys region [1978, eng] **B-20901**
Microbial life at low temperatures: ecological aspects [1978, eng] **B-21169**
Role of lichens in antarctic ecosystems [1978, eng] **B-21228**
Soil chemistry of E. Ongul Island [1977, jap] **E-19295**
Soil development in the Taylor Valley and McMurdo Sound area [1977, eng] **E-19660**
Analysis of permafrost cores from antarctic dry valleys [1977, eng] **E-19664**
Development and significance of polygenetic features in antarctic soils [1977, eng] **E-20405**
Soil chemistry of Marion Island (Subantarctic) [1978, eng] **E-20412**
Moraines of probable Miocene age, Dry Valleys, Antarctica [1978, eng] **E-20870**
Nature of the soil of Mars: evidence from Antarctica [1978, eng] **E-20871**
Soil weathering sequences in Wright Valley [1978, eng] **E-21524**

CRYOPEDOLOGY
Physical-geographic description of the Fildes Peninsula (South Shetland Islands) [1977, eng] **E-19372**

Antarctic soil studies using a scanning electron microscope [1978, eng] **E-20106**

Penguins
See: Aves-Sphenisciformes

Periodicals
An expedition newspaper, *Antarctic News* [1978, jap] **A-20437**

Permafrost
Geothermal studies in Antarctica [1977, eng] **E-19657**
Soil development in the Taylor Valley and McMurdo Sound area [1977, eng] **E-19660**
Analysis of permafrost cores from antarctic dry valleys [1977, eng] **E-19664**
Paleohydrology of Taylor Valley, Antarctica inferred from pore ice in permafrost core [1977, eng] **E-19999**
Polar groundwater—a thermo-saline system [1978, eng] **E-21092**

Personnel
Members of the 1st JARE—samurai [1978, jap] **D-19767**
Role of iceberg utilization research and development in enhancing the transfer of technology in Saudi Arabia [1978, eng] **F-20474**
Science Council of Japan and the JARE [1978, jap] **G-19771**
South Pole approach [1978, eng] **G-20061**
Report of Operation *Deep Freeze* 78, 1977-1978 [1978, eng] **G-20416**
Antarctic operations manual [1978, eng] **G-20778**
Colds and immunity at McMurdo Station and Scott Base [1977, eng] **H-19593**
Information requirements of antarctic personnel [1977, rus] **H-19891**
Studying personality and psychosocial adjustment in polar workers using a test [1978, rus] **H-21043**
Stability of job attitudes in long-term isolated groups [1970, eng] **H-21197**
OIC's rating of individual performance [1967, eng] **H-21245**
Performance ratings using an interpersonal check list [1967, eng] **H-21246**
Some biographical correlates of assessed performance in small antarctic groups [1968, eng] **H-21247**
Congressional hearings on criminal acts in Antarctica [1977, eng] **M-20381**

SCREENING
Personality testing in psychosocial research at polar stations [1978, rus] **H-21041**
Success is predictable [1971, eng] **H-21120**

Pesticides
Man's impact on antarctic birds [1978, eng] **B-19987**
Glaciological research in the Antarctic Peninsula [1977, eng] **F-19477**
Investigations at dome C in the austral summer of 1976-1977 [1977, eng] **F-19678**
Search for organochlorine residues in antarctic snow [1977, eng] **F-20114**

Petrels
See: Aves-Procellariiformes

Petrology
Permian and Triassic Beacon rocks near Beardmore Glacier [1968, eng] **E-19250**
Geology of Shackleton Glacier area, Queen Maud Range, Transantarctic Mountains, Antarctica [1969, eng] **E-19287**
Geology and petrography of the northern Yamato Mountains, East Antarctica [1977, eng] **E-19311**
Deformation, serpentinization and emplacement of a dunite complex [1977, eng] **E-19322**
ARA *Islas Orcadas* cruise 0775 sediment descriptions [1977, eng] **E-19354**
Geology of the Scott Glacier and Wisconsin Range area [1967, eng] **E-19398**
Petrogenetic significance of volcanic rocks [1974, eng] **E-19415**
Stratigraphy and sediments of rocks in the Queen Maud Range area [1968, eng] **E-19462**
Geochronology of the basement rocks of the Transantarctic Mts. [1970, eng] **E-19470**
Marine manganese deposits [1977, eng] **E-19509**
Geology of the Fosdick Mountains, Marie Byrd Land, West Antarctica [1969, eng] **E-19543**
Geochronology in relation to the stratigraphy of the Antarctic Peninsula [1976, eng] **E-19548**
Sedimentary rocks from Charcot Island [1976, eng] **E-19565**
Volcanoes and volcanic rock in Antarctica [1977, jap] **E-19586**
With the Soviets in Antarctica, austral summer 1976-1977 [1977, eng] **E-19648**
Geological studies of the Dufek intrusion, Pensacola Mountains, 1976-1977 [1977, eng] **E-19650**
Geologic studies in the South Orkney Islands [1977, eng] **E-19655**
Marie Byrd Land volcanology [1977, eng] **E-19656**
Geology of some volcanic rocks from the Ross Island, Mount Morning and southern Victoria Land areas [1977, eng] **E-19658**
Petrogenesis of Ferrar Group rocks [1977, eng] **E-19661**
Logging summary of the Dry Valley Drilling Project [1977, eng] **E-19665**
Freshwater lakes in Pleistocene McMurdo Sound [1977, eng] **E-19666**
Petrology of the Dana Mountains, Antarctic Peninsula [1978, eng] **E-19779**
Petrology and age of Walvis Seamount and Gough Island volcanic tuffs [1977, eng] **E-19850**
General synthesis of Central and South Atlantic drilling results, Leg 39, Deep Sea Drilling Project [1977, eng] **E-19851**
Antarctic plate boundary in Southwest Indian Ocean [1978, eng] **E-19869**
Indian Ocean sediment distribution since the Late Jurassic [1978, eng] **E-19876**
Proceedings of the second Symposium on Yamato Meteorites [1978, eng] **E-19916**
Yamato-74 meteorites [1978, eng] **E-19917**
First meteorites found in Victoria Land, Dec. 1976 and Jan. 1977 [1978, eng] **E-19919**
Possible mechanism of concentration of meteorites in Antarctica [1978, eng] **E-19920**
Classification for the Yamato-74 chondrites [1978, eng] **E-19923**
Mineralogical and petrographical studies of the Yamato meteorites, Yamato-7301(j), -7305(k), -7308(l) and -7303(m) from Antarctica [1978, eng] **E-19924**
Petrological studies of Yamato-74 meteorites (1) [1978, eng] **E-19925**
Petrological studies of Yamato-74 meteorites (2) [1978, eng] **E-19926**
Preliminary mineralogical examination of the Yamato-74 achondrites [1978, eng] **E-19927**
Yamato achondrite polymict breccias [1978, eng] **E-19928**
Rare gas studies of Yamato-7301(j), -7304(m) and -7305(k) [1978, eng] **E-19929**
Cosmic ray induced Mn-53 in Yamato-7301(j), -7305(k) and -7304(m) meteorites [1978, eng] **E-19930**
Oxygen isotopes in several Yamato meteorites [1978, eng] **E-19931**
K-Ar age of Yamato meteorite, Yamato-74190-01(L) [1978, eng] **E-19932**
REE, Ba, Sr and Rb in the Yamato meteorites [1978, eng] **E-19933**
Supplementary notes on the magnetic classification of stony meteorites [1978, eng] **E-19934**
Magnetic properties of an iron meteorite and a pallasite [1978, eng] **E-19935**
Metallographic properties of Yamato iron meteorite and stony-iron meteorite [1978, eng] **E-19936**
Note on new antarctic iron meteorites [1978, eng] **E-19937**
Yamat-74662 meteorite: a carbonaceous chondrite Type II [1978, eng] **E-19938**
Sedimentologic approach to lithosphere plate restoration [1978, eng] **E-19989**
Petrography and petrology of a basanitoid flow from Hut Point Peninsula, Antarctica [1974, eng] **E-19997**
New occurrences of dish structure in the stratigraphic record [1977, eng] **E-20015**
Geology of the Dufek intrusion in Antarctica [1975, jap] **E-20050**
Inverted pigeonites from lunar breccia 76255 [1977, eng] **E-20066**
Age and position of the Ellsworth Mountains crustal fragment, Antarctica [1977, eng] **E-20090**
Anatectic origin of late orogenic granitic intrusions of the Hope and Ida groups in the Beardmore Glacier area, Antarctica [1972, rus] **E-20134**

Petrology *(cont.)*

Symposium on Andean and Antarctic volcanology problems [1976, eng] **E-20144**
Upper Cenozoic volcanism in the Andes of southern Chile [1976, eng] **E-20145**
Geology and geochemistry of Bouvet Island [1976, eng] **E-20146**
Precambrian basement at Molodezhnaya Station, East Antarctica [1978, eng] **E-20181**
Antarctic meteorite newsletter, Vol.1, No.1 [1978, eng] **E-20188**
Cenozoic volcanism in the Antarctic [1977, eng] **E-20277**
Antarctic geological map series. Sheet 11 - Cape Hinode [1978, eng] **E-20301**
Antarctic geological map series. Sheet 17—Northern Yamato Mountains (1) Mt. Fukushima [1978, eng] **E-20302**
Geology of the region between the Renegar and Blue Glaciers [1978, eng] **E-20320**
Geological structure of the western part of Enderby Land [1968, eng] **E-20339**
Minerals in Cenozoic rocks of Ross Island [1978, eng] **E-20363**
Trace elements in volcanic rocks of Ross Island and vicinity [1978, eng] **E-20365**
Geochemistry of Ferrar dolerite from Don Juan Pond [1978, eng] **E-20367**
Geology and volcanic history of Hut Point Peninsula [1978, eng] **E-20368**
Genesis of volcanic rocks of Ross Island [1978, eng] **E-20373**
Correlation of clinopyroxene composition with environment of formation [1978, eng] **E-20375**
Antarctic meteorite newsletter, Vol.1, No.2 [1978, eng] **E-20407**
Search for meteorites [1978, jap] **E-20439**
Metamorphic geology of the Windmill Islands [1977, eng] **E-20540**
K-Ar ages of Bounty Islands granites and metasediments [1978, eng] **E-20541**
Campbell Island geology [1978, eng] **E-20542**
Geological structure of Mac. Robertson Land (East Antarctica) [1978, rus] **E-20600**
Geological materials collected at RISP Site J9 [1978, eng] **E-20703**
Petrographic character of moraine deposits in Prince Charles Mountains (Mac.Robertson Land) [1978, rus] **E-20720**
Beacon Supergroup in the Allan Hills, central Victoria Land, Antarctica [1977, eng] **E-20752**
Mineralogy of ejecta from Mt. Erebus [1977, eng] **E-20758**
Stratigraphy of the New Mountain Sandstone [1978, eng] **E-20848**
Densities, porosities, and seismic velocities of some rocks from Victoria Land, Antarctica [1978, eng] **E-20849**
Reconnaissance study of the McMurdo volcanics northwest of the Koettlitz Glacier [1978, eng] **E-20872**
Buchites in basalts in the Payún Matrú volcano and the Matienzo Base in the Argentine Antarctic [1966, spa] **E-20944**
Antarctic meteorite newsletter, Vol.1, No.3 [1978, eng] **E-20960**
Geology of the Gerlache Strait, 64-65S [1976, spa] **E-21009**
Paulet Island and recent volcanism in the islands of the northwest Weddell Sea [1973, spa] **E-21086**
Age of Mount Andrus and Sr 87/Sr 86 ratio of volcanic rocks in Marie Byrd Land and the South Shetlands [1973, spa] **E-21087**
Eleven new meteorites from Antarctica, 1976-1977 [1978, eng] **E-21124**
Petrology of the Yamato meteorites (j), (k), (l), and (m) from Antarctica [1978, eng] **E-21125**
Cosmic-ray-produced Mn-53 in thirty-one meteorites [1978, eng] **E-21129**
Quartz-pyrite rocks of the South Shetland Islands, western Antarctic Peninsula [1978, eng] **E-21216**
Nd and Sr isotope data on cal-alkaline andesites and plateau lavas from South America [1979, eng] **E-21224**
Compositions of three tephra layers from the Byrd Station ice core, Antarctica [1978, eng] **E-21239**
Metamorphic petrology of the Sarmiento ophiolite complex, Chile [1978, eng] **E-21287**
Fossil marginal basin in the southern Andes [1974, eng] **E-21327**
Model for ocean-floor metamorphism, seismic layering and magnetism [1976, eng] **E-21328**
Nature of the oceanic crust [1976, eng] **E-21330**
Orogenic volcanism in Southern Chile [1976, sp] **E-21331**
Mesozoic volcano-tectonic rift zone in southernmost South America [1978, eng] **E-21333**
Pillow talk [1978, eng] **E-21334**
Geology of New Mountain sandstone, South Victoria Land [1974, eng] **E-21495**
Petrologic study of the granulite-facies metamorphic rocks of Enderby Land [1978, eng] **E-21497**
Plutonic rocks from the Ruppert Coast, West Antarctica [1978, eng] **E-21500**
Geologic studies in Orville Coast and eastern Ellsworth Land, Antarctic Peninsula [1978, eng] **E-21501**
Stratigraphical studies in Orville Coast and eastern Ellsworth Land [1978, eng] **E-21502**
Ages for vida granite and olympus granite gneiss, Victoria Valley [1978, eng] **E-21508**
Rubidium-strontium geochronology of granitic rocks from Mr. Chapman [1978, eng] **E-21509**
Stratigraphy and sedimentary petrology of the Fremouw Formation [1978, eng] **E-21513**
Geology of DVDP 1 and the hyaloclastite of DVDP 3, Hut Point Peninsula, Antarctica [1978, eng] **E-21520**
Volcanoes in the Hobbs Coast and Ruppert Coast sectors of Marie Byrd Land [1978, eng] **E-21521**
Volcanic geology of the lower slopes of Mt. Morning [1978, eng] **E-21523**
Basal sediment ages of Islas Orcadas cruise 11 piston-cores [1978, eng] **E-21559**
Basal sediment ages of ARA *Islas Orcadas* cruise 12 piston cores [1978, eng] **E-21560**
Manganese nodules in the South Georgia Basin and Falkland Plateau [1978, eng] **E-21566**
Miocene glaciomarine sediments from site J-9, Ross Ice Shelf, Antarctica [1978, eng] **E-21573**
Petrographic and paleontological study of lower Tertiary erratics from Quaternary moraines, Black Island, Antarctica [1974, eng] **E-21656**
Comparison of geological structure of southeast Indostan and Sri Lanka with Enderby Land, Mac. Robertson Land and Princess Elizabeth Land in East Antarctica [1978, rus] **E-21699**
Antarctic metamorphic facies [1978, rus] **E-21700**
Ice-rafted sediments in the Arctic and Antarctic [1976, eng] **F-20402**
Rb-Sr mantle isochrons and variations in the chemistry of Gondwanaland's lithosphere [1978, eng] **L-19879**
Paleomagnetism of Ordovician lamprophyres from Taylor Valley [1977, eng] **L-20266**

Philately

See: Postal service

Photogrammetry

Photogrammetric studies of a group from the G.D.R. during the 17th Soviet Antarctic Expedition [1975, ger] **C-19503**
"Mountains of German-Soviet friendship" in Enderby Land (Antarctica) [1977, ger] **C-21083**
Some problems of photogrammetry in Antarctica [1976, eng] **C-21393**
U.S. Navy global ice analysis and forecasting [1978, eng] **F-20751**
Flow rate and ice discharge of the Hays, Campbell and Assender Glaciers, Enderby Land, Antarctica [1977, ger] **F-21156**

Photographs

Scenery of the south: Falkland Islands, South Georgia, Subantarctic islands [1975, eng] **A-19370**
Richard Harrington's Antarctic [1976, eng] **A-19469**
Australians in the Antarctic [1971, eng] **A-19954**
Argentine antarctic as you've never seen it [1971, spa] **A-20271**
Picture postcards of arctic and antarctic scenes [1976, rus] **A-20607**
Penguins in Moscow [1977, rus] **B-19541**
Auroras in the cusp region [1977, eng] **K-19720**
Recent progress in antarctic auroral studies [1978, eng] **K-20297**

Photography

Antarctic sightseeing flight by Air New Zealand [1978, jap] **A-19775**
Fish, crustaceans, and the sea floor under the Ross Ice Shelf [1979, eng] **B-21102**
Report of Antarctic Development Squadron Six operations [1978, eng] **G-20415**

See also: Aerial photography

Photointerpretation
Integrated approach to the remote sensing of floating ice [1977, eng] **F-19861**
Spacecraft in glaciological investigations [1977, rus] **F-20157**
Use of infrared and visible imagery for sea ice monitoring [1978, eng] **F-21066**

Photosynthesis
Productivity of the antarctic and tropical/subtropical regions [1977, eng] **B-20043**
Photosynthesis in mosses and lichens [1975, eng] **B-20399**

Physical properties
See under: Glacier ice; Ice; Ice sheet; Icebergs; Pack ice; Sea ice; Shelf ice; Snow

Physiology
See under: Arthropoda; Arthropoda-Arachnida; Arthropoda-Crustacea; Arthropoda-Insecta; Aves; Aves-Sphenisciformes; Echinodermata; Mammalia; Mammalia-Cetacea; Mammalia-Pinnipedia; Mollusca; Pisces; Thallophyta; Thallophyta-Algae

HUMAN
Clothing man in a cold environment [1978, eng] **G-20318**
Design recommendations for insulated clothing for members of Soviet antarctic expeditions [1978, rus] **G-21045**
Physiological adaptation and health of an expedition in Antarctica, with comment on behavioural adaptation [1977, eng] **H-19266**
Trace elements in human hair [1977, jap] **H-19300**
Human body burdens of cesium-137 and potassium-40 [1977, jap] **H-19301**
Acclimatization of physiological functions in Antarctica [1963, jap] **H-19441**
Effect of isolation from environmental allergens on the allergic state [1977, eng] **H-19449**
Relationships between ascorbic acid and serum proteins of the immune system [1977, eng] **H-19488**
Clinical and biochemical studies of human adaptation in central Antarctica as applied to space biology and medicine [1977, rus] **H-19531**
Respiratory virus transmission at McMurdo Station [1977, eng] **H-19591**
Lack of increased susceptibility to colds at McMurdo [1977, eng] **H-19592**
Colds and immunity at McMurdo Station and Scott Base [1977, eng] **H-19593**
Analysis of saliva and the oral cavity [1977, rus] **H-19894**
Circadian rhythm in Antarctica [1975, jap] **H-20049**
Energy balance in man [1977, eng] **H-20143**
Medical research in the Antarctic, particularly in the French austral and antarctic territories [1978, fre] **H-20232**
Working Group on Human Biology and Medicine [1978, eng] **H-20325**
Antarctic physiology [1978, jap] **H-20435**
Experimental use of computers for data analysis in medical geographical research [1978, rus] **H-20614**
Variations in frequency spectra on EEG's of antarctic workers [1978, rus] **H-20730**
Antiviral resistance under antarctic winter conditions [1978, rus] **H-20774**
Immunization under antarctic conditions [1978, rus] **H-20775**
Electroencephalography, isolation and hypnotic capability at Scott Base [1978, eng] **H-20877**
Influence of isolation on body and skin temperature [1975, eng] **H-20986**
Human adaptation to unusual living conditions [1978, rus] **H-21031**
Environment and psychophysiological aspects of human adaptation in Antarctica [1978, rus] **H-21034**
Characteristics of acclimatization [1978, rus] **H-21035**
Clinical and biochemical studies of acclimatization [1978, rus] **H-21036**
Adrenal function during acclimatization [1978, rus] **H-21037**
Cerebral blood flow adaptation to high-altitude hypoxia in Antarctic workers [1978, rus] **H-21038**
Circadian rhythm in human blood circulation in Antarctica [1978, rus] **H-21039**
Peripheral blood indicators in wintering 15th SAE personnel at Vostok [1977, rus] **H-21141**
Motor system dynamics and adaptational features in wintering antarctic personnel [1977, rus] **H-21143**
Assessing thermoregulation in wintering personnel at a coastal antarctic station [1977, rus] **H-21144**
Oxygen consumption tests for antarctic wintering over party [1978, ger] **H-21241**
Effect of antarctic conditions on blood protein [1978, rus] **H-21435**
Acclimatization of peripheral thermoregulation [1978, rus] **H-21457**
Acclimatization of cardiovascular system at sea and on land [1978, rus] **H-21458**
Respiratory virus transmission at McMurdo Station and Scott Base [1978, eng] **H-21606**
Respiratory virus infection late in isolation at the South Pole [1978, eng] **H-21607**
Human immunology under antarctic conditions [1978, rus] **H-21708**

Phytogeography
See under: Biogeography

Pinnipedia
See: Mammalia-Pinnipedia

Pisces
Fishing gear techniques to catch krill and fish in the Scotia Sea [1978, ger] **A-21449**
Parasites of antarctic birds and fish [1975, spa] **B-20262**
Analysis of krill, krill products and antarctic fish species [1977, ger] **B-20557**
Eubrachiella antarctica on some antarctic fish [1977, eng] **B-20558**
Life in the deep south [1978, eng] **B-21080**
Life below the Ross Ice Shelf, Antarctica [1979, eng] **B-21101**
Fish, crustaceans, and the sea floor under the Ross Ice Shelf [1979, eng] **B-21102**
Research and exploration of the resources of krill and food fish in the Antarctic. Report on the 1975/76 Antarctic Expedition of the Federal Republic of Germany [1977, ger] **B-21118**
Antarctic fisheries [1978, eng] **B-21151**
Ecological interactions in the Southern Ocean [1979, eng] **B-21225**
Course of the Antarctic Expedition of the Federal Republic of Germany [1978, ger] **D-21444**
Mechanical processing of antarctic fish [1977, ger] **G-20970**

BEHAVIOR
Freezing resistance in some Antarctic fishes [1968, eng] **B-19272**
Nesting behavior of *Harpagifer bispinis* [1978, eng] **B-20546**
Echosounding for the vertical distribution of antarctic krill [1978, ger] **B-21448**

BLOOD AND CIRCULATION
Biological antifreeze [1974, eng] **B-19275**
Proteins of cold-adapted Antarctic fishes [1969, eng] **B-19288**
Role of glycoprotein and peptide antifreezes in the survival of polar fishes [1977, eng] **B-19606**
Blood physiology in ice fish [1977, ger] **B-19817**
Adsorption inhibition as a mechanism of freezing resistance in polar fishes [1977, eng] **B-20021**
Physiology of cold adaptation in polar marine poikilotherms [1977, eng] **B-20041**
Physiological adaptation in antarctic fishes [1978, eng] **B-20314**

BREEDING CYCLES AND REPRODUCTION
Fecundity of *Notothenia rossi marmorata* and its relation to fat content [1972, rus] **B-20574**
Fecundity of Scotia Sea fish [1973, eng] **B-20822**

ECOLOGY
Ecology of some antarctic benthic fishes and echinoderms [1977, eng] **B-19607**
Fish populations of Doumer Island, Antarctic Peninsula [1977, spa] **B-20911**
Trematodofauna of some mass species of fish in the southwest Atlantic [1975, rus] **B-21324**

EXPLOITATION
Prospects for the utilization of krill [1973, eng] **A-20073**
Preparing vitamin A from antarctic icefish liver [1972, rus] **A-20808**
Processing *Notothenia marmorata* roe [1971, rus] **A-20810**

Pisces

EXPLOITATION *(cont.)*

Efficient method of filleting toothfish and other large fish [1970, rus] **A-20811**

Technological and chemical characteristics and utilization of *Notothenia rossi marmorata* [1968, rus] **A-20812**

Processing and product development [1978, ger] **B-21451**

GEOGRAPHIC DISTRIBUTION

Fish resources in the South Atlantic Ocean [1976, ger] **A-20966**

Revision of the Antarctic and southern genus *Notothenia* [1966, eng] **B-19391**

New distribution of *Champsocephalus gunnari* Lönnberg (Pisces, Chaenichthyidae) [1970, spa] **B-19738**

Fish populations of Doumer Island, Antarctic Peninsula [1977, spa] **B-20911**

New data on the distribution of antarctic fishes [1979, eng] **B-21399**

Species composition and zoogeographic analysis of bottom fish fauna in the Scotia Sea [1977, rus] **B-21433**

Antarctic Expedition 1975-1976 of the Federal Republic of Germany [1978, ger] **B-21443**

New Gonostomatid fish from the South Atlantic Ocean [1972, eng] **B-21489**

New Gonostomatid from the South Atlantic Ocean [1973, ger] **F-21490**

MORPHOLOGY

Fish resources in the South Atlantic Ocean [1976, ger] **A-20966**

Proteins of cold-adapted Antarctic fishes [1969, eng] **B-19288**

Fishes of the genus *Neophrynichthys* [1977, eng] **B-19815**

Revision of the South American Zoarcidae (Osteichthyes, Blennioidei) [1977, eng] **B-20556**

Description of 2 species of *Notolepis* [1978, ger] **B-20559**

Notes on some fishes associated with the antarctic krill. 1. *Neopagetopsis ionah* Nybelin [1978, eng] **B-20825**

Age determination in green notothenia *(Notothenia gibberifrons* Lönnb, Nothothenidae) of the southwest Atlantic [1975, rus] **B-21325**

Systematic review of the fish genus *Lycodapus* (Zoarcidae) with descriptions of two new species [1978. eng] **B-21428**

New Gonostomatid fish from the South Atlantic Ocean [1972, eng] **B-21489**

New Gonostomatid from the South Atlantic Ocean [1973, ger] **F-21490**

NUTRITION

Fish resources in the South Atlantic Ocean [1976, ger] **A-20966**

Predation on foraminifera by antarctic fish [1978, eng] **B-20536**

Fermented alkane and krill meal as a fish meal substitute in trout fodder [1977, ger] **B-20969**

Feeding of fishes of the families Nototheniidae and Chaenichthyidae in the South Orkney Islands [1978, eng] **B-21400**

Energetics of the Falkland sprat *Sprattus fuegensis* Jenyns [1977, rus] **B-21438**

Micronekton and zooplankton [1978, ger] **B-21446**

Fishery biological investigations [1978, ger] **B-21447**

Quality of preservation of antarctic fish and krill products [1977, ger] **G-20972**

PATHOLOGY

Fishery biological investigations [1978, ger] **B-21447**

PHYSIOLOGY

Freezing resistance in some Antarctic fishes [1968, eng] **B-19272**

Biological antifreeze [1974, eng] **B-19275**

Temperature adaptation in fish myofibrillar ATPases [1977, eng] **B-19448**

Antarctic marine secondary production and the phenomenon of cold adaptation [1977, eng] **B-19473**

Characteristics of the energy balance in three Notothenia species [1975, rus] **B-19497**

Role of glycoprotein and peptide antifreezes in the survival of polar fishes [1977, eng] **B-19606**

Protein differentiation in the muscles of an antarctic fish [1978, fre] **B-19780**

Blood physiology in ice fish [1977, ger] **B-19817**

Lipid sacs as a buoyancy adaptation in an antarctic fish [1978, eng] **B-19906**

Adsorption inhibition as a mechanism of freezing resistance in polar fishes [1977, eng] **B-20021**

Physiology of cold adaptation in polar marine poikilotherms [1977, eng] **B-20041**

Physiology and biochemistry of low temperature adaptations in polar marine ectotherms [1978, eng] **B-20206**

Respiration of invertebrates and fishes under hypostenothermic conditions [1975, eng] **B-20220**

Physiological adaptation in antarctic fishes [1978, eng] **B-20314**

Some characteristics of fat metabolism in *Notothenia rossi marmorata* in the prespawning period [1972, rus] **B-20573**

Fecundity of *Notothenia rossi marmorata* and its relation to fat content [1972, rus] **B-20574**

Notes on some fishes associated with the antarctic krill. 1. *Neopagetopsis ionah* Nybelin [1978, eng] **B-20825**

Antifreeze glycoprotein biosynthesis in antarctic fishes [1979, eng] **B-21217**

Carotenoids in the flesh of some antarctic fish [1978, eng] **B-21237**

Respiratory adaptation and energy metabolism in antarctic notothenid fishes [1978, eng] **B-21403**

Energetics of the Falkland sprat *Sprattus fuegensis* Jenyns [1977, rus] **B-21438**

POPULATION

Natural mortality of *Notothenia rossi marmorata* [1975, rus] **B-21326**

Antarctic Expedition 1975-1976 of the Federal Republic of Germany [1978, ger] **B-21443**

TAXONOMY

Revision of the Antarctic and southern genus *Notothenia* [1966, eng] **B-19391**

Fishes of the genus *Neophrynichthys* [1977, eng] **B-19815**

Revision of the South American Zoarcidae (Osteichthyes, Blennioidei) [1977, eng] **B-20556**

New species of *Chaenichthys* from the Southern Ocean [1974, rus] **B-20585**

Systematic review of the fish genus *Lycodapus* (Zoarcidae) with descriptions of two new species [1978, eng] **B-21428**

Place names

See: Geographic names

Plankton

Eucampia balaustium n. sp. Castr. and *Mölleria antarctica* n. sp. Castr. Taxonomy and nomenclature [1975, eng] **B-19309**

Some marine plankton genera of the diatom family Thalassiosiraceae [1973, eng] **B-19499**

Processes organizing contrasting benthic communities of McMurdo Sound [1977, eng] **B-19608**

Foraminiferal species obtained from Deception Island [1977, eng] **B-19617**

Marine biology. Vol.2. Biological productivity of the ocean [1977, rus] **B-20017**

Productivity of the antarctic and tropical/subtropical regions [1977, eng] **B-20043**

Ecology and biogeographic patterns of planktonic foraminifera [1977, eng] **B-20102**

Aquatic primary production in the Antarctic [1977, eng] **B-20274**

Predation on foraminifera by antarctic fish [1978, eng] **B-20536**

Guembelitria samwelli Jenkins, a new Oligocene species [1978, eng] **B-20537**

Abyssal benthonic foraminifera [1978, eng] **B-20538**

Sessile *Tubinella funalis* (Brady) [1978, eng] **B-20539**

Recent foraminifera [1976, eng] **B-20548**

Sea ice organisms and their importance to the antarctic ecosystem (Review) [1978, eng] **B-20878**

Nutrient fluxes in Lake Bonney—a meromictic antarctic lake [1977, eng] **B-20892**

Plankton of Foster Bay, Deception Island, December 1970 [1977, spa] **B-20909**

Carbon isotope ratio of marine plankton related to surface water masses [1978, eng] **B-20959**

Life in the deep south [1978, eng] **B-21080**

Examination of twelve plankton species [1964, eng] **B-21265**

Microplankton from "Productividad 3" oceanographic cruise [1971, spa] **B-21269**

Biology of an antarctic aquatic moss community [1978, eng] **B-21289**

Authigenous silicon in the mixed plankton from the Atlantic province of the Antarctic [1978, eng] **B-21478**
Development of planktonic biogeography in the southern ocean during the Cenozoic [1978, eng] **B-21562**
Microbial life beneath the Ross Ice Shelf [1978, eng] **B-21578**
Biogeography and metabolism of Ross Sea plankton [1978, eng] **B-21580**
Ecosystem comparisons of oasis lakes and soils [1978, eng] **B-21605**
Southeast Indian Ocean: upper Pleistocene calcareous nannofossil zones and paleoclimatic history [1975, eng] **E-19281**
Biostratigraphy and paleoecology of Neogene and Oligocene silicoflagellates [1974, eng] **E-19282**
Biometry of *Globigerina* [1977, eng] **E-19418**
Test ultrastructure of some calcareous foraminifera [1977, eng] **E-19419**
Paleoclimatic history in deep-sea cores [1972, eng] **E-19423**
Late Mesozoic-Cenozoic history of the eastern Falkland Plateau [1977, eng] **E-19636**
Basal sediment ages of *Islas Orcadas* cruise 7 piston cores [1977, eng] **E-19637**
Marine microfossils on the McMurdo Ice Shelf [1977, eng] **E-19644**
Analysis of permafrost cores from antarctic dry valleys [1977, eng] **E-19664**
Intercontinental correlation by conchostracans and palynomorphs [1977, eng] **E-19669**
Thalassiosira torokina n.sp. (diatom) and its significance in Late Cenozoic biostratigraphy [1977, eng] **E-19671**
Early Tertiary geology of the Indian Ocean region [1978, eng] **E-19874**
Cenozoic subsurface micropaleontology and geology of eastern Taylor Valley, Antarctica [1977, eng] **E-20000**
Paleoclimatic trends in Early and Middle Pliocene deep-sea sediments of the Antarctic [1978, eng] **E-20552**
Oceanic micropalaeontology [1977, eng] **E-20563**
Recent planktonic foraminifera [1977, eng] **E-20564**
Investigations of Quaternary climate based on planktonic foraminifera [1977, eng] **E-20565**
Ecology and distribution of Recent radiolaria [1977, eng] **E-20567**
Test size variation in Globigerina bulloides in response to Quaternary palaeoceanographic changes [1978, eng] **E-20631**
Application of transfer functions to Indian Ocean planktonic foraminifera [1978, eng] **E-20803**
Comparison of radiolarian/planktonic foraminiferal paleooceanography of the subantarctic Indian Ocean [1978, eng] **E-20804**
Significance of the Pleistocene occurrence of Helotholus vema in high-latitude sediments [1977, eng] **E-20860**
Late Cenozoic oxygen and carbon isotopic history and volcanic ash stratigraphy [1979, eng] **E-21180**
Late Neogene chronostratigraphy, biostratigraphy, biochronology and paleoclimatology [1973, eng] **E-21195**
Development and use of a mathematical model for an antarctic lake [1978, eng] **E-21238**
Basal sediment ages of Islas Orcadas cruise 11 piston-cores [1978, eng] **E-21559**
Basal sediment ages of ARA *Islas Orcadas* cruise 12 piston cores [1978, eng] **E-21560**
Amino acid racemization in *Islas Orcadas* piston core 12-77-24 [1978, eng] **E-21561**
Cenozoic microfossil datums in deep-sea sediments [1978, eng] **E-21563**
Paleontology and paleoenvironment of the Southwest Atlantic Ocean Basin [1978, eng] **E-21564**
Planktonic foraminiferal dissolution [1978, eng] **E-21565**
Modern zoogeography of antarctic planktonic microfossils [1978, eng] **E-21567**
Studies of deep-sea benthonic foraminifera in the southeast Indian Ocean [1978, eng] **E-21570**
Paleoclimatic applications of mean-size variations in *Globigerina bulloides* d'Orbigny [1978, eng] **E-21571**
Miocene glaciomarine sediments from site J-9, Ross Ice Shelf, Antarctica [1978, eng] **E-21573**
Late Quaternary paleogeology and paleoclimatology [1978, eng] **E-21575**
Piston coring aboard USCGC *Glacier* in the Ross Sea [1978, eng] **E-21576**
Sea ice studies in the Weddell Sea region aboard USCGC *Burton Island* [1977, eng] **F-19706**
Underwater sea ice formations [1977, eng] **F-20033**
Isotope studies [1978, eng] **I-21188**
Carbonate compensation depth in the Southern Ocean south of Australia [1975, eng] **J-19274**
ARA *Islas Orcadas* cruise 6 in the Argentine Basin [1977, eng] **J-19632**
Late Quaternary paleoceanographic events in the southeast Indian Ocean [1976, eng] **J-19914**
Physical and chemical data. *Piquero* Expedition 16 December 1968-16 April 1969 [1974, eng] **J-20518**
Carbon isotope composition in the marine environment [1978, eng] **J-20579**
Nutrients, plankton, and circulation around New Zealand [1978, eng] **J-20805**
Antiprod 1 cruise, *Marion Dufresne,* 1-28 March, 1977 [1978, fre] **J-21272**

PHYTOPLANKTON
Plankton diatoms in the South Pacific Ocean [1968, eng] **B-19251**
Phytoplankton within the Antarctic Convergence [1969, eng] **B-19399**
Limnological survey of the Ablation Point area, Alexander Island, Antarctica [1977, eng] **B-19472**
Effects of ice facies on small scale oceanic phenomena [1977, eng] **B-19609**
Ecosystem studies and mathematical model for Lake Bonney [1977, eng] **B-19610**
Microbial distribution and activity in and around McMurdo Sound [1977, eng] **B-19613**
Phytoplankton studies in the water column and in the pack ice of the Weddell Sea [1977, eng] **B-19616**
Primary productivity and estimates of potential yields of the Southern Ocean [1978, eng] **B-20204**
Distribution of indicator species of planktonic algae in the world ocean [1978, eng] **B-20606**
Microbial investigations in the Ross Sea [1978, eng] **B-21579**
Ross sea region in the Middle Miocene: a glimpse into the past [1979, eng] **E-21096**
Influence of diatoms on the structure and strength of sea ice [1968, eng] **F-20332**
Biogenic elements of the troposphere and subtroposphere of the Indian Ocean [1973, rus] **J-19334**
Primary production in antarctic waters [1977, eng] **J-20039**
Amino acids dissolved in sea water as one of the indicators of the physiologic state of an ecosystem [1978, eng] **J-20932**

ZOOPLANKTON
South African participation in cruise MD08 of *Marion Dufresne* [1976, eng] **B-19902**
Potential impact of harvesting zooplankton on the south circumpolar ecosystem [1978, eng] **B-19985**
Some Antarctic dinoflagellates and tintinnids [1975, spa] **B-19996**
Mathematical analysis of bottom fauna distribution [1978, rus] **B-20444**
Seasonal plankton variations [1975, eng] **B-20672**
Zooplankton fisheries of the world: a review [1978, eng] **B-20831**
Animals of the antarctic islands [1973, eng] **B-20906**
Occurrence and metabolic activity of organisms under the Ross Ice Shelf, Antarctica, at Station J9 [1979, eng] **B-21103**
Larval krill *(Euphausia superba)* in the plankton and neuston samples of the German Antarctic Expedition 1975-76 [1978, eng] **B-21344**
Occurrence of *Paralabidocera antarctica* (I.C. Thompson) (Copepoda: Calanoida: Acartiidae) in an antarctic saline lake [1978, eng] **B-21351**
Micronekton and zooplankton [1978, ger] **B-21446**

Polar cap absorption
Radio communications for travellers on the Arctic Ocean [1978, eng] **G-20790**
North-south asymmetry in the intensity of polar cap absorption [1977, eng] **K-20079**
Observations of the entry of solar protons into the magnetosphere by use of riometers [1974, eng] **K-20136**
Time of peak noontime recovery effect [1977, rus] **K-20168**
Optical diagnostics of the August 1972 PCA event [1976, eng] **K-20509**
Polar cap absorption in Antarctica in 1967 [1973, eng] **K-20524**
Eastward movement of the structure of auroral radio absorption events in the morning sector [1976, eng] **K-20689**

Polar cap absorption *(cont.)*
PCA variations during shock-wave proton precipitation July 24-25, 1970 [1977, rus] **K-21137**
Polar cap geomagnetic variations studies [1978, eng] **K-21633**

Polar wandering
Revised palaeomagnetic data for Australia and Gondwanaland [1977, eng] **L-20217**
Tentative paleocontinental maps for the Early Phanerozoic and Proterozoic [1978, eng] **L-20688**
Paleomagnetism of the Alcaparrosa Formation, Argentina [1978, eng] **L-21230**

Political geography
Mineral resources and geopolitics in Antarctica [1979, eng] **E-21652**
Possibilities of internationalization of Antarctica [1977, ger] **M-20288**

Pollution
See under: Atmosphere; Ice; Ice sheet; Sea water; Snow. *See also:* Particulates; Pesticides

Polynyas
Features of summer ice processes in the Pacific sector of Antarctica [1978, rus] **F-20648**

AREA
Maximum size of a wind-generated lead during sea freezing [1968, eng] **F-20234**

DISTRIBUTION
Ice conditions in the Leningradskaya Station area [1978, rus] **F-20763**

HEAT EXCHANGE
Sea ice and ocean energy balance studies at Mawson, Antarctica [1977, eng] **F-20891**

RADIATION
Sea ice and ocean energy balance studies at Mawson, Antarctica [1977, eng] **F-20891**

Population
See under: Arthropoda; Arthropoda-Arachnida; Arthropoda-Crustacea; Aves; Aves-Charadriiformes; Aves-Procellariiformes; Aves-Sphenisciformes; Mammalia; Mammalia-Cetacea; Mammalia-Pinnipedia; Pisces

Porifera
Long-term experimental benthic studies in McMurdo Sound [1978, eng] **B-21583**

MORPHOLOGY
Two new fossil demosponges from West Ongul Island, Lützow-Holm Bay, Antarctica [1977, eng] **B-20239**

TAXONOMY
Two new fossil demosponges from West Ongul Island, Lützow-Holm Bay, Antarctica [1977, eng] **B-20239**

Postal service
Antarctic explorers: new definitives for British Antarctic Territory [1973, eng] **A-20059**
Japanese postage stamps [1975, spa] **A-20265**

Power
Self propelled iceberg [1978, eng] **F-20470**

ELECTRIC
Energy and fresh water production from icebergs [1978, eng] **F-20486**
Icebergs as a heat sink for power generation [1978, eng] **F-20487**
Report of Operation *Deep Freeze* 78, 1977-1978 [1978, eng] **G-20416**

NUCLEAR
Dismantling McMurdo's reactor [1977, eng] **G-19489**
Examination of radioactivity in the crushed rock from the PM-3A nuclear reactor site, McMurdo, Antarctica [1976, eng] **G-20496**
Nuclear power reactor at McMurdo [1978, eng] **G-20945**
Icebreaker propulsion systems feasibility study [1967, eng] **G-21201**
Polar icebreaker preliminary structural design and special studies [1968, eng] **G-21206**

Precipitation
Factors controlling oxygen isotopic composition of fallen snow in Antarctica [1978, eng] **F-19880**
Changes in the composition of atmospheric precipitation [1977, eng] **F-20045**
Processes responsible for the trace content in precipitation [1977, eng] **F-20111**
Precipitation-forming mechanisms [1977, eng] **F-20113**
Distribution of mean surface stable isotope values [1977, eng] **F-20115**
Distribution of artificial tritium in firn samples from East Antarctica [1977, eng] **F-20116**
Long-term accumulation characteristics at Vostok Station, Antarctica [1978, rus] **F-20615**
Snow, glaciers, ice sheets [1978, pol] **F-21157**
Role of precipitation processes in chemistry of polar snows [1976, eng] **F-21672**
Measurement of argon isotopes in air samples and comparison with computations from a model [1973, ger] **I-19344**
Atmosphere's role in chemical composition of Ross Ice Shelf snow [1977, eng] **I-19697**
Lidar and replication studies of ice crystal precipitation at the South Pole [1977, eng] **I-19701**
Meteorological research aboard instrumented LC-130R airplane and at the South Pole [1977, eng] **I-19704**
Seasonal variations of meteorological elements at Mizuho Plateau [1978, eng] **I-19829**
Atmospheric halos [1978, eng] **I-19941**
Climatology of solid precipitation [1976, ger] **I-20074**
Seasonal climatic variability over the southern oceans [1977, eng] **I-20076**
Effects of human activities on global climate; a summary, with consideration of the implications of a possibly warmer earth [1977, eng] **I-20957**
Dry ice = Antarctica [1978, eng] **I-21077**
Isotope studies [1978, eng] **I-21188**
Atmospheric ice crystals at the South Pole in summer [1978, eng] **I-21609**
Poleward water vapor transport for coastal East Antarctica [1978, eng] **I-21622**
Report of polar meteorology workshop, Reno, Nevada, 1975 [1976, eng] **I-21660**
Lidar and replicator measurements of ice crystal precipitation at South Pole [1976, eng] **I-21671**

Pressure
See under: Atmosphere

Primary productivity
Limnology of fresh water lakes at Anvers Island, Antarctica [1971, eng] **B-19490**
Effects of ice facies on small scale oceanic phenomena [1977, eng] **B-19609**
Ecosystem studies and mathematical model for Lake Bonney [1977, eng] **B-19610**
Microbial distribution and activity in and around McMurdo Sound [1977, eng] **B-19613**
Phytoplankton studies in the water column and in the pack ice of the Weddell Sea [1977, eng] **B-19616**
Potential impact on Lake Bonney of activities associated with modeling freshwater antarctic ecosystems [1978, eng] **B-19983**
Living resources of the Southern Ocean [1977, eng] **B-20001**
Marine biology. Vol.2. Biological productivity of the ocean [1977, rus] **B-20017**
History and recent advances in the study of ice biota [1977, eng] **B-20035**
Seasonal changes in sea ice algae near Showa Station [1977, eng] **B-20037**
Amphipods and polychaetes of both polar oceans compared [1977, eng] **B-20042**
Productivity of the antarctic and tropical/subtropical regions [1977, eng] **B-20043**
Primary productivity and estimates of potential yields of the Southern Ocean [1978, eng] **B-20204**

Conservation of southern ocean marine resources [1978, eng] B-20223
Terrestrial ecosystems in the Antarctic [1977, eng] B-20273
Aquatic primary production in the Antarctic [1977, eng] B-20274
Sea ice organisms and their importance to the antarctic ecosystem (Review) [1978, eng] B-20878
Primary productivity in sea ice of the Weddell region [1978, eng] B-20937
Harvesting: ecological and energy considerations [1978, eng] B-21081
Microplankton from "Productividad 3" oceanographic cruise [1971, spa] B-21269
Photosynthesis of algae in ice [1978, eng] B-21279
Biology of an antarctic aquatic moss community [1978, eng] B-21289
Primary productivity of a hypersaline antarctic lake [1978, eng] B-21350
Ecology of the Southern Ocean region [1978, eng] B-21472
Biogeography and metabolism of Ross Sea plankton [1978, eng] B-21580
Ecosystem comparisons of oasis lakes and soils [1978, eng] B-21605
Studying Southern Ocean biological resources [1978, rus] B-21706
Recent planktonic foraminifera [1977, eng] E-20564
Terrestrial and marine sources for atmospheric ice nuclei [1976, eng] F-20306
Sea ice and ice algae relationships in the Weddell Sea [1978, eng] F-21544
Solar radiation over the Weddell and Ross Seas [1978, eng] I-21608
Biogenic elements of the troposphere and subtroposphere of the Indian Ocean [1973, rus] J-19334
Chlorophyll content in surface water [1977, eng] J-19525
Primary production in antarctic waters [1977, eng] J-20039
Chlorophyll-a distribution in southern Indian Ocean [1978, eng] J-20087
Nutrients, plankton, and circulation around New Zealand [1978, eng] J-20805
Amino acids dissolved in sea water as one of the indicators of the physiologic state of an ecosystem [1978, eng] J-20932
Non-biogenic fixed nitrogen in antarctic surface waters [1978, eng] J-20991
Antiprod 1 cruise, *Marion Dufresne*, 1-28 March, 1977 [1978, fre] J-21272
On the chlorophyll content in the surface water of the Indian and the Antarctic Oceans [1963, eng] J-21278
Abyssal traces and megafauna in the Arctic and Antarctic [1978, eng] J-21452
Long-term global sea surface temperature fluctuations and their possible influence on atmospheric CO2 concentrations [1978, eng] J-21480

Procellariiformes
See: Aves-Procellariiformes

Programs
See: Research programs

Protozoa
Some marine plankton genera of the diatom family Thalassiosiraceae [1973, eng] B-19499
Foraminiferal species obtained from Deception Island [1977, eng] B-19617
Predation on foraminifera by antarctic fish [1978, eng] B-20536
Guembelitria samwelli Jenkins, a new Oligocene species [1978, eng] B-20537
Abyssal benthonic foraminifera [1978, eng] B-20538
Sessile *Tubinella funalis* (Brady) [1978, eng] B-20539
Recent foraminifera [1976, eng] B-20548
A new *Euplotidae* [1974, fre] B-21117
Dispersal of algae and Protozoa by antarctic flying birds [1978, eng] B-21590
Paleoclimatic trends in Early and Middle Pliocene deep-sea sediments of the Antarctic [1978, eng] E-20552
Oceanic micropalaeontology [1977, eng] E-20563
Investigations of Quaternary climate based on planktonic foraminifera [1977, eng] E-20565
Ecology and distribution of Recent radiolaria [1977, eng] E-20567
Significance of the Pleistocene occurrence of Helotholus vema in high-latitude sediments [1977, eng] E-20860

ECOLOGY
Ecology and biogeographic patterns of planktonic foraminifera [1977, eng] B-20102
Systematics and ecology of ciliated protozoa from King George Island, South Shetland Islands [1978, eng] B-21149

GEOGRAPHIC DISTRIBUTION
Antarctic radiolaria and the late Tertiary and Quaternary history of the Southern Ocean [1964, eng] B-19253
Distribution of anaerobic bacteria [1977, jap] B-19302
Foraminifera and radiolaria in sediments of the Scotia and Weddell Seas [1967, eng] B-19519
Ecology and biogeographic patterns of planktonic foraminifera [1977, eng] B-20102
Bacteriological study of pollution [1977, jap] H-19303

TAXONOMY
Systematics and ecology of ciliated protozoa from King George Island, South Shetland Islands [1978, eng] B-21149
Recent planktonic foraminifera [1977, eng] E-20564

Psychology
Physiological adaptation and health of an expedition in Antarctica, with comment on behavioural adaptation [1977, eng] H-19266
Changes in social life of wintering parties [1977, jap] H-19304
Adaptation of groups to antarctic isolation [1977, eng] H-19345
Information requirements of antarctic personnel [1977, rus] H-19891
Medical research in the Antarctic, particularly in the French austral and antarctic territories [1978, fre] H-20232
Working Group on Human Biology and Medicine [1978, eng] H-20325
Summary of psychological effects of antarctic service [1978, eng] H-20876
Electroencephalography, isolation and hypnotic capability at Scott Base [1978, eng] H-20877
Human adaptation to unusual living conditions [1978, rus] H-21031
Social and health aspects of human adaptation in polar regions [1978, rus] H-21033
Environment and psychophysiological aspects of human adaptation in Antarctica [1978, rus] H-21034
Characteristics of acclimatization [1978, rus] H-21035
Clinical and biochemical studies of acclimatization [1978, rus] H-21036
Personality testing in psychosocial research at polar stations [1978, rus] H-21041
Psychosocial research at Vostok during the 19th SAE [1978, rus] H-21042
Studying personality and psychosocial adjustment in polar workers using a test [1978, rus] H-21043
Relationship between cohesiveness and effectiveness in small isolated groups: a field study [1974, eng] H-21072
Group homogeneity, compatibility and accomplishment [1967, eng] H-21074
Group compatibility in restricted environments [1967, eng] H-21119
Success is predictable [1971, eng] H-21120
Morbidity among members of the 15th Soviet Antarctic Expedition [1977, rus] H-21142
Effect of extreme antarctic conditions on the psychosomatic state of personnel [1977, rus] H-21145
Stability of job attitudes in long-term isolated groups [1970, eng] H-21197
Individual behavior in confined or isolated groups [1970, eng] H-21198
OIC's rating of individual performance [1967, eng] H-21245
Performance ratings using an interpersonal check list [1967, eng] H-21246
Some biographical correlates of assessed performance in small antarctic groups [1968, eng] H-21247
Human adaptation and health in Antarctica [1978, rus] H-21707
See also: Interpersonal relationships; Isolation effects; Light and darkness effects

Pteridophyta
Subantarctic Pteridophyta: observations and new records [1978, eng] **B-21357**
An unusual osmundaceous specimen from Antarctica [1978, eng] **B-21396**

Publications
Catalogue of data and publications on the Arctic and Antarctic; Vols. 1, 3-6 [1976, rus] **A-19881**
An expedition newspaper, *Antarctic News* [1978, jap] **A-20437**

Radiation
Resource and radioactivity survey in southern Victoria Land [1977, eng] **E-19663**
Logging summary of the Dry Valley Drilling Project [1977, eng] **E-19665**
Recent changes in snow and ice [1978, eng] **F-21190**
Atmospheric processes and energy transfers at the South Pole [1977, eng] **I-19700**
Energy balance climate models [1978, eng] **I-19990**
Antarctic atmosphere as seen by satellites [1977, eng] **I-20283**
Climatic change [1978, eng] **I-21186**
Heat balance of the Earth [1978, eng] **I-21189**
Gamma ray activity from radioactive fallout at the South Pole [1978, eng] **I-21620**
Siple/Roberval VLF transmitting experiments [1977, eng] **K-19711**
Magnetospheric radiation from power lines [1975, eng] **K-20507**
Auroral x-rays in conjugate regions [1970, eng] **K-20698**
Transmitter simulation of power line radiation effects in the magnetosphere [1978, eng] **K-20997**
Magnetospheric effects of power line radiation [1978, eng] **K-21001**
Precipitating electrons observed from balloons [1978, eng] **K-21624**
Power line radiation in the magnetosphere [1978, eng] **K-21629**
Results of several years of study of low-frequency radiation in the antarctic atmosphere [1978, rus] **K-21692**
See also under: Firn; Ice; Pack ice; Polynyas; Sea ice; Snow

ATMOSPHERIC
Temperature profiles from satellite radiation data for Europe and Antarctica [1977, hun] **I-19492**
Antarctic meteorological data. Special volume [1978, eng] **I-19945**
Increase in atmospheric radiocarbon 1959-1969 [1973, eng] **I-20069**
Obtaining and processing actinometric data in polar regions [1977, rus] **I-20428**

BALANCE
Radiation budget at Plateau Station, Antarctica, 1966-1967 [1977, eng] **I-19337**
Temperature regime of the South Pole [1977, eng] **I-19694**
Obtaining and processing actinometric data in polar regions [1977, rus] **I-20428**
Features of radiation balance at the water surface in the Drake Passage, summer 1976 [1978, rus] **J-20645**

CORPUSCULAR
See: Solar activity/Corpuscular radiation

COSMIC
Proceedings of the second Symposium on Yamato Meteorites [1978, eng] **E-19916**
Rare gas studies of Yamato-7301(j), -7304(m) and -7305(k) [1978, eng] **E-19929**
Cosmic ray induced Mn-53 in Yamato-7301(j), -7305(k) and -7304(m) meteorites [1978, eng] **E-19930**
Cosmic-ray-produced Mn-53 in thirty-one meteorites [1978, eng] **E-21129**
Nitrogen in south polar ice and snow: tool to measure past solar, auroral, and cosmic ray activities [1977, eng] **F-19679**
Cosmic ray intensity variations [1977, eng] **K-19722**
Upper atmosphere research in Antarctica [1978, eng] **K-20291**
Cosmic rays [1978, eng] **K-20292**
Early history of upper atmospheric physics research in Antarctica [1978, eng] **K-20299**
Solar-polar coronal holes and the north-south cosmic ray gradient [1978, eng] **K-20627**
Symmetrical equator-pole anisotropy during an unusual cosmic ray storm [1978, eng] **K-20628**
Cosmic-ray intensity in the near-earth atmosphere and at the surface of the earth [1975, eng] **K-21162**
North-south anisotropy of cosmic rays [1975, eng] **K-21165**
Cosmic ray intensity variations [1978, eng] **K-21635**
See also: Solar activity/Cosmic ray events

EFFECTS ON MAN
Peripheral blood indicators in wintering 15th SAE personnel at Vostok [1977, rus] **H-21141**

SOLAR
Analysis of thermosolutal phenomena observed in McMurdo saline lakes [1978, eng] **E-20376**
Lake Vanda (Antarctica) revisited [1977, eng] **E-20754**
Solar activity records planetary ice caps [1978, eng] **F-21407**
Solar radiation measurements in the Weddell Sea, 1977 [1977, eng] **I-19708**
Seasonal variation of incident solar radiation over the South Atlantic Ocean [1977, eng] **I-19709**
Antarctic meteorological data, 1975 [1975, eng] **I-19943**
Antarctic meteorological data, 1976 [1976, eng] **I-19944**
Methods and results of studying radiation properties of snow-firn covers [1977, rus] **I-20426**
Obtaining and processing actinometric data in polar regions [1977, rus] **I-20428**
Polarizing radiometer measurements of skylight at South Pole station, Antarctica [1977, eng] **I-20899**
Meteorological data at Mizuho Station, Antarctica in 1977-1978 [1978, eng] **I-20999**
Geophysical monitoring for climatic change, No.6. Summary report 1977 [1978, eng] **I-21405**
Light transmission and its modification by the inversion and general circulation of the antarctic atmosphere [1973, eng] **I-21493**
Solar radiation over the Weddell and Ross Seas [1978, eng] **I-21608**
Spectroscopic studies at McMurdo, South Pole, and Siple stations [1978, eng] **I-21611**
Geophysical monitoring for climatic change at the South Pole, 1977 [1978, eng] **I-21618**
Light intensity and polarization measurements at the South Pole [1976, eng] **K-21664**

Radio communication
Radar as an aid to surface navigation in Antarctica [1977, eng] **G-19348**
Radar and satellite communications system at Palmer Station [1978, eng] **G-19757**
Long-distance propagation of time signals [1977, rus] **G-19893**
Report of Antarctic Treaty meeting on telecommunications [1978, eng] **G-20620**
Antarctic field manual [1978, eng] **G-20779**
Operation *Deep Freeze;* Operation order No.1-79 [1978, eng] **G-20783**
Radio communications for travellers on the Arctic Ocean [1978, eng] **G-20790**
American ham operator at Mirnyy [1979, eng] **G-21711**
Transmitting ECG's from Antarctica to Moscow by radio [1977, rus] **H-21146**
Air-sea interaction studies using an X-band radar at Palmer Station [1977, eng] **I-19707**
Effectiveness of collecting meteorological data in Antarctica by means of simultaneous or consecutive querying of stations by shortwave [1977, rus] **I-20169**
Auroral research applied to radio communication [1966, ger] **K-19453**
Dual coherent auroral radar observations from Siple Station, Antarctica [1977, eng] **K-19713**
Satellite link between Palmer Station and Nevada [1977, eng] **K-19728**
Intersection of geomagnetic force lines with the interplanetary magnetic field in the evening portion of the south polar cap [1977, rus] **K-20170**
Very low frequency radio waves in the magnetosphere [1978, eng] **K-20294**
Polar cap absorption in Antarctica in 1967 [1973, eng] **K-20524**
Feasibility of using a quartz clock for determining phase drift of very low-frequency radiowaves [1978, rus] **K-20770**
Results of field intensity measurements of short-wave exact time radio stations at Molodezhnaya [1978, rus] **K-20771**

Results and prospects of Soviet geophysical research in the Antarctic [1978, rus] **L-20675**
See also: HF communication

Radio studies
See under: Aurora

Radioactive fallout
Accumulation of snow and radioactive debris in Antarctica [1977, eng] **F-20117**
Less surface accumulation on the Ross Ice Shelf than hitherto assumed [1977, eng] **F-20119**
Human body burdens of cesium-137 and potassium-40 [1977, jap] **H-19301**
Radioactive air pollution in the southern hemisphere [1977, rus] **I-20694**
Glooal transport rate for radioactive products and behavior of Cesium-137 in the antarctic atmosphere in 1969-70 [1977, rus] **I-20695**
Gamma ray activity from radioactive fallout at the South Pole [1978, eng] **I-21620**

Radioactivity
See under: Atmosphere; Ice sheet

Radiosondes
Studies of barometric leveling in Antarctica [1975, ger] **C-19505**
Deviations of atmospheric temperature data over Antarctica [1977, eng] **I-19459**
Global temperature variation, surface-100 mb: an update into 1977 [1978, eng] **I-20883**

Regulations
See: Laws and regulations

Rescue operations
See: Search and rescue

Research facilities
Preliminary report of the 1976/77 Norwegian Antarctic Research Expedition [1977, eng] **A-19778**
Antarctic Marine Geology Research Facility, 1976-1977 [1977, eng] **E-19645**
Antarctic Marine Geology Research Facility, 1977-78 [1978, eng] **E-21639**
Central ice core storage facility and information exchange [1977, eng] **F-19693**
Design and operation of the ice core data bank [1976, eng] **F-20604**
Contractor support [1977, eng] **G-19730**
Operational capability of a polar research ship [1978, eng] **G-19754**
Reopening of Showa Station [1978, jap] **G-19769**
Scientific station Almirante Brown [1973, eng] **G-19949**
LABEL, Upper Atmosphere Physics Laboratory, General Belgrano Station [1973, eng] **G-19951**
Cost of U.S. antarctic research [1971, eng] **G-19960**
U.S. Antarctic Support study extension: Case 10—McMurdo Station-Outer Williams Field military construction and operation [1972, eng] **G-20304**
U.S. Antarctic support study extension: Case 11 [1972, eng] **G-20305**
Vanda Station—oasis in dry valleys [1978, eng] **G-20313**
Organization of the new Soviet station Molodezhnaya [1968, eng] **G-20343**
Report of Antarctic Development Squadron Six operations [1978, eng] **G-20415**
Report of Operation *Deep Freeze* 78, 1977-1978 [1978, eng] **G-20416**
Operation *Deep Freeze;* Operation order No.1-79 [1978, eng] **G-20783**
Public Works Department, *Deep Freeze* 78 [1978, eng] **G-21644**
Contractor support [1978, eng] **G-21646**
East Base, Stonington Island, Antarctic Peninsula [1978, eng] **G-21648**
Geophysical monitoring for climatic change, No.6. Summary report 1977 [1978, eng] **I-21405**
Sky-Hi Station report, Dec. 1961-Feb. 1962 [1962, eng] **K-19743**
Unmanned geophysical observatory for antarctic operation [1972, eng] **K-20555**

Research institutions
Traditions and current tasks of polar research [1978, ger] **A-20887**
Glaciological field stations, Parts 1 and 2 [1979, eng] **F-21291**

Antarctic Marine Geology Research Facility
Antarctic Marine Geology Research Facility, 1977-78 [1978, eng] **E-21639**

British Antarctic Survey
British Antarctic Survey, 1976-77 [1977, eng] **A-19346**
British Antarctic Survey [1977, eng] **A-20267**
British Antarctic Survey: annual report, 1975-76 [1977, eng] **A-20268**
British Antarctic Survey, 1977-78 [1978, eng] **A-21153**
British Antarctic Survey [1978, eng] **A-21260**

International Antarctic Meteorological Research Centre, Melbourne
International Antarctic Meteorological Research Centre [1967, eng] **A-20240**

Japan. National Institute of Polar Research
National Institute of Polar Research, Tokyo, Japan [1978, eng] **A-20946**

Leningrad. Arkticheskĭ i antarkticheskĭ nauchno-issledovatel'skĭ institut
Current status of arctic and antarctic research and prospects for further development [1978, rus] **A-20610**

National Institute of Polar Research (Tokyo)
New computer system of the National Institute of Polar Research [1977, eng] **A-19530**

New Zealand. Department of Scientific and Industrial Research
DSIR research 1975 [1975, eng] **A-19494**
DSIR research 1977 [1977, eng] **A-20103**

Polar Research Board
Polar Research Board, 1977-1978 [1978, eng] **A-21636**

Royal Geographical Society
List of Royal Geographic Society archives on Antarctica [1976, eng] **A-20006**

Scott Polar Research Institute
Fifty-first annual report on the work of the Scott Polar Research Institute [1978, eng] **A-20323**

Smithsonian Oceanographic Sorting Center
Studies in polar biology [1977, eng] **B-19618**

Waikato, University
University of Waikato 1975 report [1975, eng] **A-20212**

Research programs
Antarctica. An information paper presented by Senator the Honourable J.J. Webster, Minister for Science [1977, eng] **A-19269**
Antarctic, Vol.8, No.1 [1977, eng] **A-19356**
Antarctic, Vol.8, No.2 [1977, eng] **A-19357**
Antarctic, Vol.8, No.3 [1977, eng] **A-19358**
Antarctic, Vol.8, No.4 [1977, eng] **A-19437**
Alluring poles; struggle for the North and South Poles [1977, ger] **A-19800**
Emergence of Antarctica [1978, eng] **A-20199**
Discussion on scientific research in Antarctica [1977, eng] **A-20272**
Research in perennial ice [1975, ger] **A-20289**
Antarctica [1978, eng] **A-20400**
Research in Antarctica [1978, eng] **A-21076**
Polar Research Board, 1977-1978 [1978, eng] **A-21636**
Scotia Arc Tectonics Project, 1977-78 [1978, eng] **E-21503**
Ross Ice Shelf Project, 1976-1977 [1977, eng] **F-19347**
Program and instructions on the compilation of the world atlas of snow and ice resources [1977, rus] **F-19577**
Role of iceberg utilization research and development in enhancing the transfer of technology in Saudi Arabia [1978, eng] **F-20474**
Pilot program for exporting antarctic icebergs [1978, eng] **F-20477**
Ice-coring project at Mizuho Station, East Antarctica, 1970-1975 [1978, eng] **F-21297**
Outline of the drilling operation at Mizuho Station [1978, eng] **F-21298**

Research programs *(cont.)*

Logistics and buoys in the first GARP global experiment [1978, eng] **G-20417**

Argentina

Activities of Argentina in Antarctica in 1977/78 [1977, spa] **A-19859**

Summary of Argentine scientific antarctic programmes: summer season 1972/73 and winter 1973 [1972, eng] **A-19950**

Directives for the Winter Antarctic Project CINIAA 1968—Belgrano Station [1967, spa] **A-19974**

Directives for the summer antarctic project of the Argentine Antarctic Institute 1968-69 (CAVIAA 1968-1969) [1968, spa] **A-19975**

Directives for the winter antarctic project CINIAA 1969—Brown Station [1968, spa] **A-19976**

Directives for the antarctic winter project CINIAA 1970—Brown Station [1969, spa] **A-19977**

Argentina's antarctic summer program 1963-64 [1963, spa] **A-20377**

Australia

Report of an ANARE observer [1976, jap] **A-19429**

Australian antarctic research program 1976/77 and plans for 1978 [1977, eng] **A-19858**

Australian research—1971-1972 [1972, eng] **A-19953**

Australians in the Antarctic [1971, eng] **A-19954**

Australian Museum Macquarie Island Expedition, 1977-78 [1978, eng] **A-20793**

Australian antarctic research, 1977-78 [1979, eng] **A-21182**

Australian antarctic research programs 1977/78 and plans for 1979 [1978, eng] **A-21250**

Antarctic mass balance studies [1974, eng] **F-20057**

Chile

Chile's report to SCAR for 1976 and plans for 1976/77 [1976, spa] **A-19856**

Antarctica [1978, spa] **A-20243**

Zoological research in the Chilean Antarctic [1977, spa] **B-21293**

France

Scientific research in the French Southern and Antarctic Lands. Outline of Plan 6 [1970, fre] **A-19380**

French southern and antarctic territories, 1772-1972 [1973, fre] **A-20241**

French cold regions tasks accomplished, 1972 [1972, fre] **A-20321**

France's antarctic policy and research effort [1976, fre] **A-20344**

French National Committee for Antarctic Research information bulletin No.59 [1976, fre] **A-20347**

French National Committee for Antarctic Research information bulletin No.60-61 [1976, fre] **A-20352**

Antarctic summer season 1971-72 [1973, fre] **A-20418**

French report to SCAR, 1968 [1968, fre] **A-20921**

French report to SCAR, 1974 [1974, fre] **A-20922**

French report to SCAR, 1975 [1975, fre] **A-20923**

French report to SCAR, 1977 [1977, fre] **A-20924**

Voyages to the Kerguelen Islands from 1772-1950 [1976, fre] **D-20348**

Recent French oceanographic voyages [1976, fre] **D-20349**

French accomplishments in glaciology, 1973 [1973, fre] **F-20419**

French accomplishments in glaciology, 1974 [1975, fre] **F-20420**

French accomplishments in glaciology, 1975 [1976, fre] **F-20421**

French accomplishments in glaciology, 1976 [1977, fre] **F-20422**

Activities of the Grenoble Glaciological Laboratory, 1976 [1977, fre] **F-20423**

Medical research in the Antarctic, particularly in the French austral and antarctic territories [1978, fre] **H-20232**

Medical care in French austral and antarctic territories [1976, fre] **H-20345**

Antiprod 1 cruise, *Marion Dufresne,* 1-28 March, 1977 [1978, fre] **J-21272**

German Federal Republic

Research and exploration of the resources of krill and food fish in the Antarctic [1977, eng] **A-19515**

Antarctic expedition of 1977-1978 in preparation [1977, ger] **D-20974**

Geophysical studies in Antarctic waters with the *M.S. Explora* [1978, eng] **J-21710**

International

[Reports of 12th SCAR meeting, Aug. 1972] [1972, eng] **A-19460**

Chile's report to SCAR for 1976 and plans for 1976/77 [1976, spa] **A-19856**

Uruguay in the "Antarctic club" [1976, spa] **A-20194**

Polar research: to the present, and the future [1978, eng] **A-20198**

Major international polar research problems [1978, eng] **A-20210**

International Antarctic Meteorological Research Centre [1967, eng] **A-20240**

Documents of the 15th meeting [1978, eng] **A-20760**

Traditions and current tasks of polar research [1978, ger] **A-20887**

Polar sub-programme of GARP [1978, eng] **A-20983**

International scientific research programs [1978, rus] **A-21687**

Ross Ice Shelf Project environmental impact statement July, 1974 [1978, eng] **B-19979**

Environmental appraisal for the Dry Valley Drilling Project phases III, IV, V (1973-74, 1974-75, 1975-76) [1978, eng] **B-19980**

Biological Investigations of Marine Antarctic Systems and Stocks (BIOMASS). Vol. 1: Research proposals [1977, eng] **B-21659**

Dry Valley Drilling Project—an international effort [1975, jap] **E-19434**

Summary of field activities of the Dry Valley Drilling Project 1972-1973 and 1973-1974 [1978, eng] **E-19981**

Dry Valley Drilling Project (DVDP) Seminar-III, June 5-10, 1978 [1978, eng] **E-20362**

Meeting of the Committee of the International Antarctic Glaciological Project (IAGP) in 1976 [1977, rus] **F-19576**

Ross Ice Shelf Project, 1976-1977 [1977, eng] **F-19685**

Antarctic ice and history of world climate [1975, spa] **F-20260**

International studies of ice sheet and bedrock [1977, eng] **F-20279**

Ross Ice Shelf Project (RISP) 1977-78 [1978, eng] **F-20312**

Antarctic glaciation and world climate [1978, rus] **F-20673**

Glaciological field stations, Parts I and 2 [1979, eng] **F-21291**

Ross Ice Shelf Project 1977-78 [1978, eng] **F-21535**

POLEX and global atmospheric circulation research [1977, eng] **I-19786**

On the role of cosmogeophysical forces in polar hydrometeorological processes [1977, eng] **I-19787**

Full-scale and model studies of nonlinear factors in baroclinic motion: a problem for the POLEX-South program [1977, eng] **I-19790**

Polar experiment results and plans [1978, rus] **I-20611**

Polar Experiment South-76 [1978, rus] **I-20633**

Polar Sub-programme [1978, eng] **I-20823**

Some results of the CLIMAP project [1978, eng] **I-21108**

U.S. contribution to the Polar Experiment (POLEX). Part 1. POLEX-GARP (North). Part 2. POLEX-GARP (South) [1974, eng] **I-21467**

Current status of Soviet investigations of the Arctic and Southern Oceans [1977, rus] **J-19588**

International Weddell Sea Oceanographic Expedition, 1977 [1977, eng] **J-19619**

FDRAKE 77 [1977, eng] **J-19624**

International Southern Ocean studies [1977, eng] **J-20032**

POLEX-South program in 1975 and 1976 [1978, rus] **J-20634**

International Weddell Sea Oceanographic Expedition, 1978 [1978, eng] **J-21552**

The ARAKS project [1978, eng] **K-21408**

Observations carried out in the field at Kerguelen Station during the ARAKS experiment [1978, eng] **K-21426**

Soviet-American geophysical research at Vostok Station [1978, rus] **L-21460**

[Press briefing] [1977, eng] **M-19583**

Italy

Antarctic expeditions of the [Italian] National Research Committee [1978, ita] **A-20233**

Japan

Newspaper articles on the JARE with the *Kainan Maru* during her calls at Wellington and Sydney in 1910-1912 [1977, jap] **A-19306**

Visit to Antarctica [1976, jap] **A-19428**

Projects of the 15th JARE wintering team [1976, jap] **A-19430**

Japan's antarctic research policy [1976, jap] **A-19431**

Profiles of members of the 16th JARE [1976, jap] **A-19432**

Activities of Japanese party in McMurdo Sound area 1976-77 [1977, eng] **A-19529**

History of JARE [1978, jap] **A-19760**

Decision to create JARE [1978, jap] **A-19761**

Beginnings of JARE [1978, jap] **A-19762**

Proposal for first JARE and the unsuccessful second wintering [1978, jap] **A-19763**
Role of JARE headquarters [1978, jap] **A-19764**
Recollections of JARE's early days [1978, jap] **A-19770**
Recalling 20 years of JARE [1978, jap] **A-19773**
Documents retrieval system at National Institute of Polar Research [1978, eng] **A-20089**
First landing at Ongul Island [1978, jap] **A-20433**
Abortive attempt at wintering [1978, jap] **A-20434**
An expedition newspaper, *Antarctic News* [1978, jap] **A-20437**
Working with the British Antarctic Survey [1978, jap] **A-20442**
Look at the Japanese Polar Research Program [1977, eng] **A-20520**
Japanese antarctic research 1978 report [1978, eng] **A-20800**
Report of the wintering party of JARE-16 [1978, jap] **A-20828**
Field surveys on Cape Ryugu, East Antarctica in 1977-1978 [1978, jap] **A-20829**
National Institute of Polar Research, Tokyo, Japan [1978, eng] **A-20946**
Programs and profiles of the 19th JARE, 1977-1978 [1978, jap] **D-19774**
Activity of the summer party of the 18th JARE in 1976-1977 [1978, jap] **D-20088**
Japanese scientific activities in the McMurdo region, 1976-1977 [1977, eng] **E-19653**
Japanese scientific activities in Victoria Land 1977-1978 [1978, eng] **E-21507**
Glaciological research program on Mizuho Plateau, 1969-1975 [1978, eng] **F-19820**
Reopening of Showa Station [1978, jap] **G-19769**
Science Council of Japan and the JARE [1978, jap] **G-19771**
Antarctic physiology [1978, jap] **H-20435**

New Zealand

New Zealand surveyors in Antarctica [1963, eng] **A-19280**
Bibliography of dry valley publications 1959-1976 [1977, eng] **A-19468**
DSIR research 1975 [1975, eng] **A-19494**
New Zealand's 1977 research report to SCAR [1977, eng] **A-19857**
Summary of research programmes, 1973, and proposed research programmes, 1975: Report No.16 to SCAR [1974, eng] **A-20020**
DSIR research 1977 [1977, eng] **A-20103**
New Zealand antarctic research programme 1977-78 [1977, eng] **A-20104**
University of Waikato 1975 report [1975, eng] **A-20212**
University of Waikato 1978 report [1978, eng] **A-20213**
Bibliography of N.Z.A.R.P. publications 1956-1976 [1978, eng] **A-20587**
Bibliography of international dry valley publications, 1907-1977 [1978, eng] **A-20588**
New Zealand antarctic research programme 1978-1979 and report of 1977-78 programme [1978, eng] **A-20717**
New Zealand antarctic research 1978 report [1978, eng] **A-21178**
Immediate report of the Victoria University of Wellington Antarctic Expedition, 1971-1972 [1972, eng] **D-20919**
New Zealand work at Vostok Station [1978, eng] **F-20308**
Vanda Station—oasis in dry valleys [1978, eng] **G-20313**
Antarctic field manual [1978, eng] **G-20779**

Norway

Preliminary report of the 1976/77 Norwegian Antarctic Research Expedition [1977, eng] **A-19778**
Norway's antarctic research for 1978 report to SCAR [1978, eng] **A-20562**
Back to the Antarctic [1977, eng] **A-20702**
Fifty years of service in polar regions [1978, eng] **A-21259**

Poland

To Antarctica on the *Tazar* [1977, pol] **A-20166**
Polish antarctic activities 1976-78 [1978, eng] **A-20792**

South Africa

News from the islands, Antarctica and SANAE [1977, eng] **A-19485**
South African participation in cruise MD08 of *Marion Dufresne* [1976, eng] **B-19902**

United Kingdom

British Antarctic Survey, 1976-77 [1977, eng] **A-19346**
British research in the Antarctic [1976, eng] **A-19495**
Looking into the health of the antarctic icecap [1977, eng] **A-19752**
British Antarctic Survey [1977, eng] **A-20267**
British Antarctic Survey: annual report, 1975-76 [1977, eng] **A-20268**
Working with the British Antarctic Survey [1978, jap] **A-20442**
Land, air and sea—research in man's environment [1975, eng] **A-20818**
British Antarctic Survey, 1977-78 [1978, eng] **A-21153**
British Antarctic Survey [1978, eng] **A-21260**

United States

Polar studies [1977, eng] **A-19481**
Antarctic research [1974, eng] **A-20133**
Polar research: to the present, and the future [1978, eng] **A-20198**
Polar research [1978, eng] **A-20284**
Antarctic journal of the United States, Vol.13, No.3 [1978, eng] **A-20858**
U.S. Antarctic program [1979, eng] **A-21655**
Studies in polar biology [1977, eng] **B-19618**
Polar research: a synthesis with special reference to biology [1978, eng] **B-20200**
Earth science investigations in the United States Antarctic Research Program (USARP) for the period July 1, 1977 - June 30, 1978 [1978, eng] **E-20561**
Cost of U.S. antarctic research [1971, eng] **G-19960**
Report of Operation *Deep Freeze* 78, 1977-1978 [1978, eng] **G-20416**
National Atmospheric Sciences Program: Fiscal year 1969 [1968, eng] **I-20493**
U.S. contribution to the Polar Experiment (POLEX). Part 1. POLEX-GARP (North). Part 2. POLEX-GARP (South) [1974, eng] **I-21467**
Review of the NOAA (NWS) meteorological program in the Antarctic [1976, eng] **I-21661**
United States antarctic policy [1978, eng] **M-19570**

Uruguay

Uruguay in the "Antarctic club" [1976, spa] **A-20194**

USSR

Results of Soviet research, 1956-1965 [1967, ger] **A-19435**
U.S.S.R. national report to SCAR, No.19 [1977, eng] **A-19568**
Soviet research in the Antarctic [1977, rus] **A-20191**
Current status of arctic and antarctic research and prospects for further development [1978, rus] **A-20610**
General description of the 18th SAE [1978, rus] **A-20735**
Eighteenth Soviet Antarctic Expedition. Winter research 1972-1974 [1978, rus] **A-20761**
U.S.S.R. national report to SCAR, No.20 [1978, eng] **A-21064**
Fifteenth Soviet Antarctic Expedition report [1977, rus] **A-21134**
Principal findings of glaciological and geomorphological research in the McMurdo Sound region (Victoria Land) [1977, rus] **A-21140**
Nineteenth Soviet Antarctic Expedition. Winter research 1973-75 [1978, rus] **A-21453**
Winter activities of the 19th SAE [1978, rus] **A-21454**
Antarctic; Commission reports, Vol.17 [1978, rus] **A-21685**
Twenty years of Soviet research in the Antarctic [1978, rus] **A-21686**
Russian names in Antarctic toponymy [1978, rus] **A-21705**
20 years since conquest of the Pole of Inaccessibility [1979, rus] **A-21714**
Main results of the 19th Soviet Wintering Expedition [1977, rus] **D-19882**
With the Soviets in Antarctica, austral summer 1976-1977 [1977, eng] **E-19648**
Soviet geological research in Antarctica [1978, rus] **E-21697**
Soviet glaciological research in 1977 [1978, rus] **F-21202**
Meetings on glaciology, Zvenigorod, 1978 [1978, rus] **F-21386**
Resolutions of a Workshop of the Glaciological Section, Feb. 1978 [1978, rus] **F-21387**
Soviet antarctic research with special consideration of medical and health problems [1977, ger] **H-20394**
Human adaptation to unusual living conditions [1978, rus] **H-21031**
Problems of adaptation and antarctic support systems [1978, rus] **H-21032**
Meteorological research in the Arctic and Antarctic during the Soviet regime [1977, rus] **I-19587**
Polar experiment results and plans [1978, rus] **I-20611**

Research programs

USSR (cont.)
Current status of Soviet investigations of the Arctic and Southern Oceans [1977, rus] **J-19588**
Problems of the Arctic and the Antarctic, collection of articles; Vol.47, 1977 [1977, eng] **J-19781**
Results and prospects of Soviet research in the Southern Ocean [1978, rus] **J-20676**
Results and prospects of Soviet geophysical research in the Antarctic [1978, rus] **L-20675**

Research vessels
Conceptual design of a polar research ship [1977, eng] **G-19726**
Ship operations, *Deep Freeze* '77 [1977, eng] **G-19734**
See also: Ships

Explora
Geophysical studies in Antarctic waters with the *M.S. Explora* [1978, eng] **J-21710**

Islas Orcadas
Improvement of scientific systems aboard ARA *Islas Orcadas* [1977, eng] **G-19727**

Marion Dufresne
Antiprod 1 cruise, *Marion Dufresne*, 1-28 March, 1977 [1978, fre] **J-21272**

SA Agulhas
Antarctic research ship [1978, afr] **J-20589**

Reviews
Antarctica. An information paper presented by Senator the Honourable J.J. Webster, Minister for Science [1977, eng] **A-19269**
Uncertain future of the Falkland Islands [1977, eng] **A-19336**
Antarctic, Vol.8, No.1 [1977, eng] **A-19356**
Antarctic, Vol.8, No.2 [1977, eng] **A-19357**
Antarctic, Vol.8, No.3 [1977, eng] **A-19358**
Results of Soviet research, 1956-1965 [1967, ger] **A-19435**
Antarctic, Vol.8, No.4 [1977, eng] **A-19437**
Focus on the Falkland Islands [1971, eng] **A-19483**
News from the islands, Antarctica and SANAE [1977, eng] **A-19485**
Alluring poles; struggle for the North and South Poles [1977, ger] **A-19800**
Australians in the Antarctic [1971, eng] **A-19954**
Ross Sea [1973, eng] **A-20060**
Antarctica [1978, spa] **A-20243**
Falkland Islands [1974, eng] **A-20246**
Argentine antarctic as you've never seen it [1971, spa] **A-20271**
Antarctica [1978, eng] **A-20712**
Traditions and current tasks of polar research [1978, ger] **A-20887**
On the ice in Antarctica [1978, eng] **A-20917**
South Shetland Islands [1977, rus] **A-21158**
Strategic importance of the polar regions to the United States [1973, eng] **A-21210**
Gathering materials for a second book about Antarctica [1978, eng] **A-21647**
Zooplankton fisheries of the world: a review [1978, eng] **B-20831**
Whale marking: a short review [1977, eng] **B-21027**
Exploring Macquarie Island. Part 1. Southern wildlife outpost [1978, eng] **B-21373**
Illustrated introduction to antarctic wildlife [1976, ita] **B-21382**
Polar regions: atlas [1978, eng] **C-20355**
Course of the Antarctic Expedition of the Federal Republic of Germany [1978, ger] **D-21444**
Geology of Antarctica: a review [1977, eng] **E-19476**
Tectonic framework of Cenozoic volcanism in the Scotia Sea region—a review [1976, eng] **E-20147**
Outlying islands of Macquarie Island [1978, eng] **E-20847**
Glaciological studies on the IAGP program in a new area of Eastern Antarctica [1977, rus] **F-20172**
Snow, glaciers, ice sheets [1978, pol] **F-21157**
Tertiary climatic evolution and vegetation history in the southeast Indian Ocean region [1978, eng] **I-20184**
Problems of the Arctic and the Antarctic, collection of articles; Vol.47, 1977 [1977, eng] **J-19781**
Recent progress in observational studies of electric fields and currents in the polar ionosphere: a review [1979, jap] **K-21679**
The future of Antarctica [1977, eng] **M-19580**
Possibilities of internationalization of Antarctica [1977, ger] **M-20288**
Regional geography of Antarctica and the Southern Ocean [1978, eng] **M-21469**

Rime
CHEMISTRY
Role of precipitation processes in chemistry of polar snows [1976, eng] **F-21672**

Roads
See: Construction/Road

Rock magnetism
See: Magnetism/Rock

Rockets
Rocket measurements of energy deposition in the atmosphere by auroral X-rays [1977, eng] **K-19721**
Proceedings of the Second Symposium on Rocket Experiments in Antarctica [1978, eng] **K-20947**
Rocket measurements of electron density and temperature profiles [1978, eng] **K-20948**
Auroral-zone energetic electrons at Showa Station [1978, eng] **K-20949**
Precipitating electrons observed by sounding rockets [1978, eng] **K-20950**
Rocket observation of keV electron fluxes at Syowa Station [1978, eng] **K-20951**
Modified electron spectrometer for medium energy [1978, eng] **K-20952**
Rocket observation of VLF emission spectra [1978, eng] **K-20953**
Rocket observations of wave phenomena in the ionosphere [1978, eng] **K-20954**
Observing plan of wave normal direction of auroral VLF emissions [1978, eng] **K-20955**
Attitudes of the antarctic sounding rocket vehicles [1978, eng] **K-20956**
Payloads for rockets in atmospheric physics [1978, eng] **K-21409**
Instrumentation aboard ARAKS Eridan rocket [1978, eng] **K-21417**
Auroral simulation experiments with a high power electron beam [1979, jap] **K-21677**
Measurements of ionospheric electric fields with antarctic sounding rockets S-210JA-24 and 25 [1979, jap] **K-21681**
Magnetic field observations with sounding rockets [1979, jap] **K-21683**

Rotation
See under: Earth

Runways
See: Construction/Runway

Safety procedures
Ross Ice Shelf Project environmental impact statement July, 1974 [1978, eng] **B-19979**
Harvesting of krill [1977, eng] **B-20002**
Some international implications of iceberg transfer [1978, eng] **F-20481**
Dismantling McMurdo's reactor [1977, eng] **G-19489**
Disposal of radioactive wastes in the antarctic ice sheet: an environmental impact assessment [1978, eng] **G-19984**
Antarctic operations manual [1978, eng] **G-20778**
Antarctic field manual [1978, eng] **G-20779**

Salinity
See under: Sea water

Sanitation
Man's impact along the Antarctic Peninsula [1978, eng] **B-19986**
Examination of radioactivity in the crushed rock from the PM-3A nuclear reactor site, McMurdo, Antarctica [1976, eng] **G-20496**
Human life support in Antarctica [1978, rus] **G-20677**
Bacteriological study of pollution [1977, jap] **H-19303**
See: Hygiene; Waste disposal

Satellites (artificial)
Space conference in Konstanz—Scientific results on fisheries [1973, ger] A-20938
Antarctic cartography [1977, eng] C-19675
Glaciological research in the Antarctic Peninsula [1977, eng] F-19477
Satellite data on snow and ice in the Arctic and Antarctic regions [1977, jap] F-19818
Spacecraft in glaciological investigations [1977, rus] F-20157
Ice sheet topography by satellite altimetry [1978, eng] F-20414
Potential application of remote sensing in locating and tracking of antarctic icebergs [1978, eng] F-20458
U.S. Navy global ice analysis and forecasting [1978, eng] F-20459
Locating icebergs + remote sensing [1978, eng] F-20488
U.S. Navy global ice analysis and forecasting [1978, eng] F-20751
Eleven year chronicle of one of the world's most gigantic icebergs [1978, eng] F-20881
Use of infrared and visible imagery for sea ice monitoring [1978, eng] F-21066
Radar and satellite communications system at Palmer Station [1978, eng] G-19757
Automatic Weather Station in Antarctica [1977, eng] I-19362
Deviations of atmospheric temperature data over Antarctica [1977, eng] I-19459
Temperature profiles from satellite radiation data for Europe and Antarctica [1977, hun] I-19492
A.P.T. Station Marambio: receiver of weather satellite pictures [1975, spa] I-20253
Antarctic atmosphere as seen by satellites [1977, eng] I-20283
Synoptic patterns and weather at McMurdo [1977, eng] I-20492
Evaluation of the informational value of upper-air and satellite measurement systems [1977, rus] I-20515
Satellite and ground-based measurements of total ozone [1978, eng] I-20626
Data acquisition from EXOS-A (Kyokkô) at Syowa Station, Antarctica [1978, jap] I-20827
Implications of outer space technology in meteorology [1975, eng] I-20859
Satellite cloud mosaics for the Southern Hemisphere [1978, eng] I-20884
Aerological stations in southern high latitudes [1977, rus] I-21268
Satellite-tracked drifters between Africa and Antarctica [1978, eng] J-19812
Study of the east-west antarctic current by means of icebergs tracked by the EOLE satellite [1977, eng] J-20026
Survey of worldwide sea surface temperature fronts [1978, eng] J-20706
Surface layer kinematics of the circumpolar current as inferred from Nimbus 6 [1978, eng] J-21546
Experiment communication and data transmission through the ATS-3 synchronous satellite [1977, eng] K-19710
Auroras in the cusp region [1977, eng] K-19720
Radio scintillation studies [1977, eng] K-19723
Satellite link between Palmer Station and Nevada [1977, eng] K-19728
On the polarization and origin of auroral kilometric radiation [1978, eng] K-19873
Satellite observations of magnetic disturbances in the polar regions [1978, eng] K-20500
Stanford University VLF wave injection experiment on the ISEE-A spacecraft [1978, eng] K-21234
Polar cap electric field structures with a northward interplanetary magnetic field [1979, eng] K-21321
Low-energy electrons in the south polar cusp [1978, eng] K-21353
ISEE-1 satellite observations of signals from the Siple transmitter [1978, eng] K-21627
Description of the T.A.A.F. geodesic network, Kerguelen Islands [1976, fre] L-20351

Scientists
See: Exchange scientists; Explorers and scientists; Personnel

Sea ice
Fifty-first annual report on the work of the Scott Polar Research Institute [1978, eng] A-20323
Spring meeting 1978, abstracts [1978, eng] A-21364
Effects of ice facies on small scale oceanic phenomena [1977, eng] B-19609
History and recent advances in the study of ice biota [1977, eng] B-20035
Organic life in sea ice [1977, eng] B-20036
Seasonal changes in sea ice algae near Showa Station [1977, eng] B-20037
Dissimilar and similar trends in antarctic and arctic marine benthos [1977, eng] B-20040
Amphipods and polychaetes of both polar oceans compared [1977, eng] B-20042
Sea ice organisms and their importance to the antarctic ecosystem (Review) [1978, eng] B-20878
Photosynthesis of algae in ice [1978, eng] B-21279
Climatic zonality of types of seacoasts [1977, rus] E-19286
Coastal geomorphology of high latitudes [1975, eng] E-20692
Sea ice [1977, eng] F-19333
Antarctic pack ice cover variations [1977, eng] F-19683
Problems of sea ice cover studies [1977, eng] F-19784
Accumulation and ablation at Syowa Station [1978, eng] F-19830
East Antarctic pack ice [1977, rus] F-19841
Ice age, past and present [1977, eng] F-19863
Icebergs in the Southern Ocean [1976, eng] F-20247
Icebergs - a natural resource [1978, eng] F-20451
U.S. Navy global ice analysis and forecasting [1978, eng] F-20459
Antarctic ice charts 1975-76 [1977, eng] F-20521
Features of summer ice processes in the Pacific sector of Antarctica [1978, rus] F-20648
Numerical simulation of the annual cycle of sea ice [1978, eng] F-20700
Interaction of the hull of the *Ob'* with compressed ice [1978, rus] F-20749
Moving ice [1978, eng] F-21078
Recent changes in snow and ice [1978, eng] F-21190
Model for melting of ice in sea water [1979, eng] F-21226
Climatic roles of ice [1978, eng] F-21282
Annotated list of Soviet literature on glaciology for 1975 [1978, rus] F-21391
Numerical model of antarctic sea ice [1978, eng] F-21542
Sea ice and ice algae relationships in the Weddell Sea [1978, eng] F-21544
Polar Star—the second time around [1978, eng] G-20856
Polar icebreaker preliminary structural design and special studies [1968, eng] G-21206
Air-sea interaction studies using an X-band radar at Palmer Station [1977, eng] I-19707
Operational meteorology, *Deep Freeze* '77 [1977, eng] I-19735
Around the world, pole to pole, in 48 hours [1977, eng] I-20150
Polar Sub-programme [1978, eng] I-20823
Implications of outer space technology in meteorology [1975, eng] I-20859
Effects of human activities on global climate; a summary, with consideration of the implications of a possibly warmer earth [1977, eng] I-20957
Climatic change [1978, eng] I-21186
Global influences of mankind on the climate [1978, eng] I-21191
U.S. contribution to the Polar Experiment (POLEX). Part 1. POLEX-GARP (North). Part 2. POLEX-GARP (South) [1974, eng] I-21467
Ross Ice Shelf Project: physical oceanography [1977, eng] J-19621
Polar Oceans conference proceedings [1977, eng] J-20022
International Southern Ocean studies [1977, eng] J-20032
Polar oceans: similarities and differences in their physical oceanography [1978, eng] J-20203
Seventh voyage of the R/V *Ob'* [1968, eng] J-20327
Activities of the *Ob'*, 1961-62 [1968, eng] J-20328
Survey of worldwide sea surface temperature fronts [1978, eng] J-20706
Soviet research in the Southern Ocean [1978, rus] J-21693

AGE DETERMINATION
Characteristics of antarctic multi-year sea ice [1977, eng] F-19405

CHEMISTRY
Sea ice studies in the Weddell Sea region aboard USCGC *Burton Island* [1977, eng] F-19706
New data on the physics of antarctic sea ice [1968, eng] F-20331
Salt and phase composition of pack ice during growth and destruction [1978, rus] F-20723
Tritium and carbon-14 distributions in McMurdo Sound, 1977 [1978, eng] J-21545

CLASSIFICATION
Some regularities of distribution and formation of floating sea ice in the Antarctic [1968, eng] **F-20329**

CONSTRUCTION
Nansen Drift Station Project—remote sea-ice runway construction [1978, eng] **F-19991**
Public works, *Deep Freeze* '77 [1977, eng] **G-19732**

CORES
Primary productivity in sea ice of the Weddell region [1978, eng] **B-20937**

DENSITY
Relation of strength to density in antarctic summer sea ice [1977, eng] **F-19407**
New data on the physics of antarctic sea ice [1968, eng] **F-20331**

DESTRUCTION
Melting and disintegration of shore ice in the Davis Sea [1968, eng] **F-20330**
Results of ice observations in Alasheyev Bight [1968, eng] **F-20336**
Structure and characteristics of fast ice in Alasheyev Bight [1968, eng] **F-20337**

DISTRIBUTION
Evaluation of possible United States involvement in an antarctic krill fishery [1976, eng] **B-19895**
Sea ice studies in the Weddell Sea region aboard USCGC *Burton Island* [1977, eng] **F-19706**
Satellite data on snow and ice in the Arctic and Antarctic regions [1977, jap] **F-19818**
Report of the Antarctic Ice Observing and Forecasting Program—1964 [1966, eng] **F-19946**
Report of the Antarctic Ice Observing and Forecasting Program—1965 [1967, eng] **F-19947**
Report of the Antarctic Ice Observing and Forecasting Program—1966 [1967, eng] **F-19948**
Some regularities of distribution and formation of floating sea ice in the Antarctic [1968, eng] **F-20329**
Results of ice observations in Alasheyev Bight [1968, eng] **F-20336**
Structure and characteristics of fast ice in Alasheyev Bight [1968, eng] **F-20337**
Characteristics of Antarctic coastal pack ice formation [1978, rus] **F-20722**
Ice conditions encountered by the d/e *Ob'* (1972/73) [1978, rus] **F-20736**
Ice conditions encountered by the research vessel *Professor Zubov* (Dec. 1972-Mar. 1973) [1978, rus] **F-20737**
U.S. Navy global ice analysis and forecasting [1978, eng] **F-20751**
Ice conditions in the Leningradskaya Station area [1978, rus] **F-20763**
Numerical modeling of seasonal variations in Antarctic sea ice [1977, eng] **F-20889**
Summary of a large-scale sea-ice model [1977, eng] **F-20890**
Use of infrared and visible imagery for sea ice monitoring [1978, eng] **F-21066**
Large-scale numerical model of sea ice [1979, eng] **F-21132**
New data on climatic trends [1977, eng] **I-19343**
Features of the oceanographic regime in Prydz Bay (Feb. 1973) [1978, rus] **J-20740**

DRIFTING
Wind drift of antarctic sea ice [1977, eng] **F-19788**
Ice-rafted sediments in the Arctic and Antarctic [1976, eng] **F-20402**
Ice conditions encountered by the d/e *Ob'* (1972/73) [1978, rus] **F-20736**
Features of the formation of the Balleny ice massif and drift of the *Ob'* [1978, rus] **F-20738**
Dynamics of the Balleny ice ridge [1978, rus] **F-20762**
Radiosounding of ice [1976, eng] **F-20984**

FORECASTING
Report of the Antarctic Ice Observing and Forecasting Program—1964 [1966, eng] **F-19946**
Report of the Antarctic Ice Observing and Forecasting Program—1965 [1967, eng] **F-19947**
Report of the Antarctic Ice Observing and Forecasting Program—1966 [1967, eng] **F-19948**
Use of infrared and visible imagery for sea ice monitoring [1978, eng] **F-21066**

FORMATION
Last glaciation of the Ross Sea, Antarctica [1977, rus] **E-20156**
Soviet antarctic expedition bulletin, vol. 92, 1976: selected articles [1977, eng] **F-19402**
Antarctic coastal morphology related to underwater ice formation [1977, eng] **F-19403**
Underwater sea ice formations [1977, eng] **F-20033**
Some regularities of distribution and formation of floating sea ice in the Antarctic [1968, eng] **F-20329**
Results of ice observations in Alasheyev Bight [1968, eng] **F-20336**

HEAT EXCHANGE
Sea ice and ocean energy balance studies at Mawson, Antarctica [1977, eng] **F-20891**

MECHANICAL PROPERTIES
Relation of strength to density in antarctic summer sea ice [1977, eng] **F-19407**
Elasticity-strength relationship in the antarctic fast ice [1977, eng] **F-19408**
Elastic and viscoelastic analyses of sea-ice sheets [1977, eng] **F-19510**
Integrated approach to the remote sensing of floating ice [1977, eng] **F-19861**
New data on the physics of antarctic sea ice [1968, eng] **F-20331**
Influence of diatoms on the structure and strength of sea ice [1968, eng] **F-20332**
Summary of a large-scale sea-ice model [1977, eng] **F-20890**
Ice engineering—tensile properties of sea ice grown in a confined system [1970, eng] **F-21207**

MORPHOLOGY
Using side-looking radar for studying ice undersurfaces [1978, rus] **F-20616**

PHYSICAL PROPERTIES
Relation of strength to density in antarctic summer sea ice [1977, eng] **F-19407**
Elasticity-strength relationship in the antarctic fast ice [1977, eng] **F-19408**
Physical properties of sea ice near Showa Station [1977, jap] **F-20047**
Short-wave radiation attenuation by ice and snow [1977, rus] **F-21138**

RADIATION
Spectroscopic studies at McMurdo, South Pole, and Siple stations [1978, eng] **I-21611**

STRUCTURE
Soviet antarctic expedition bulletin, vol. 92, 1976: selected articles [1977, eng] **F-19402**
Structure of shore ice along the Amery Ice Shelf [1977, eng] **F-19404**
Characteristics of antarctic multi-year sea ice [1977, eng] **F-19405**
Underwater sea ice formations [1977, eng] **F-20033**
Influence of diatoms on the structure and strength of sea ice [1968, eng] **F-20332**
Ice engineering—tensile properties of sea ice grown in a confined system [1970, eng] **F-21207**

SURFACE FEATURES
Some regularities of distribution and formation of floating sea ice in the Antarctic [1968, eng] **F-20329**
Surface strain measurements on sea ice and on Erebus Glacier Tongue [1978, eng] **F-21543**

THAWING
Melting and disintegration of shore ice in the Davis Sea [1968, eng] **F-20330**
Antarctic influence on Brazil's environment [1977, eng] **I-21062**

THICKNESS
Sea ice studies in the Weddell Sea region aboard USCGC *Burton Island* [1977, eng] **F-19706**
Melting and disintegration of shore ice in the Davis Sea [1968, eng] **F-20330**
Structure and characteristics of fast ice in Alasheyev Bight [1968, eng] **F-20337**
Large-scale numerical model of sea ice [1979, eng] **F-21132**
Results of navigability trials of antarctic ice by the *Ob'* [1978, rus] **G-20739**

VARIATIONS
Pack ice edge in summer [1977, eng] F-20095
Numerical modeling of seasonal variations in Antarctic sea ice [1977, eng] F-20889
Role of the polar regions in global climate change [1978, eng] I-20202

Sea level
Termination of last interglacial episode and the Wilson Antarctic surge hypothesis [1978, eng] E-20008
Gondwanan glaciation, cyclothems, continental positioning, and climate change [1978, eng] E-21005
West Antarctic ice sheet and CO2 greenhouse effect: a threat of disaster [1978, eng] F-19878
Margin of continuous glaciation of Western Antarctica in the Ross Sea during the last glaciation maximum [1977, rus] F-20173
Problem of conjugation of currents in the Arctic and Southern Oceans [1977, eng] J-19785
Low sea levels, droughts and mammalian extinctions [1978, eng] J-19942

Sea travel
See: Navigation/Sea

Sea water
Phytoplankton within the Antarctic Convergence [1969, eng] B-19399
Phytoplankton studies in the water column and in the pack ice of the Weddell Sea [1977, eng] B-19616
Ross Ice Shelf Project environmental impact statement July, 1974 [1978, eng] B-19979
Underwater sea ice formations [1977, eng] F-20033
Iceberg utilization [1978, eng] F-20448
Osmotic propulsion of icebergs [1978, eng] F-20469
Making decisions on iceberg utilization [1978, eng] F-20475
On melting icebergs [1978, eng] F-21061
Air-sea interaction studies using an X-band radar at Palmer Station [1977, eng] I-19707
Oceanic fronts [and] European Geophysical Society meeting abstracts [1977, eng] J-21362
See also: Ocean

AGE DETERMINATION
Ageing and circulation of West Atlantic Deep Water [1977, eng] J-20080

CHEMISTRY
Foraminifera and radiolaria in sediments of the Scotia and Weddell Seas [1967, eng] B-19519
Effects of ice facies on small scale oceanic phenomena [1977, eng] B-19609
Productivity of the antarctic and tropical/subtropical regions [1977, eng] B-20043
Primary productivity and estimates of potential yields of the Southern Ocean [1978, eng] B-20204
Abyssal benthonic foraminifera [1978, eng] B-20538
Carbon isotope ratio of marine plankton related to surface water masses [1978, eng] B-20959
Authigenous silicon in the mixed plankton from the Atlantic province of the Antarctic [1978, eng] B-21478
Biogeography and metabolism of Ross Sea plankton [1978, eng] B-21580
Selective dissolution of Recent coccoliths in the Atlantic Ocean [1977, eng] E-20568
Sedimentological clues to palaeo-oceanography [1977, eng] E-20569
Geochemistry of basalt-sea-water interactions: evidence from Deception Island, Antarctica, and Reykjanes, Iceland [1977, eng] E-20618
Planktonic foraminiferal dissolution [1978, eng] E-21565
Effect of glacial ice melting on the Antarctic Surface Water [1979, eng] E-21657
Geochemical and isotope studies, Ross Ice Shelf Project [1977, eng] F-19688
Subsurface measurements of the Ross Ice Shelf, McMurdo Sound, Antarctica [1977, eng] F-19689
Non-biogenic fixed nitrogen in Antarctica and some ecological implications [1978, eng] F-19915
Precipitation-forming mechanisms [1977, eng] F-20113
View of the formation of saline waters in the dry valleys [1978, eng] F-20374
Sea ice and ice algae relationships in the Weddell Sea [1978, eng] F-21544
Isotope studies [1978, eng] I-21188
Carbonate compensation depth in the Southern Ocean south of Australia [1975, eng] J-19274
Distribution of dissolved copper in the Pacific [1977, eng] J-19323
Oceanic microcosm of particles [1977, eng] J-19328
Biogenic elements of the troposphere and subtroposphere of the Indian Ocean [1973, rus] J-19334
Uranium in open ocean: concentration and isotopic composition [1977, eng] J-19516
Chlorophyll content in surface water [1977, eng] J-19525
Oceanographic data of the 17th JARE 1975-1976 [1977, eng] J-19528
On the abyssal temperatures of the World Oceans [1968, eng] J-19544
International Weddell Sea Oceanographic Expedition, 1976: tritium results [1977, eng] J-19620
Ross Ice Shelf Project: physical oceanography [1977, eng] J-19621
Soviet-American research aboard RV *Professor Zubov* [1977, eng] J-19627
Basin waters of the Bransfield Strait [1978, eng] J-19913
Sedimentation and Antarctic Bottom Water circulation in the southeast Indian Ocean [1978, eng] J-19992
Primary production in antarctic waters [1977, eng] J-20039
Dissolution kinetics of calcium carbonate in sea water [1978, eng] J-20065
Oceanographic station data collected aboard R/V *Melville* during FDRAKE 75 [1977, eng] J-20078
Ageing and circulation of West Atlantic Deep Water [1977, eng] J-20080
Chlorophyll-a distribution in southern Indian Ocean [1978, eng] J-20087
Modeling of tracers: salinity and oxygen [1978, eng] J-20185
Topographic effect on the deep circulation and the abyssal oxygen distribution [1978, eng] J-20249
C-13 change analysis of oceanic particulate organic matter [1973, eng] J-20270
Seventh voyage of the R/V *Ob'* [1968, eng] J-20327
Activities of the *Ob'*, 1961-62 [1968, eng] J-20328
Oceanographic data collected aboard R/V *T.G. Thompson* during FDRAKE 76, Legs I and II [1978, eng] J-20413
Silica in the near-bottom Atlantic [1975, eng] J-20506
Physical and chemical data. *Piquero* Expedition 16 December 1968-16 April 1969 [1974, eng] J-20518
Silica density of near-bottom Atlantic waters [1974, eng] J-20519
Carbon isotope composition in the marine environment [1978, eng] J-20579
Phosphate content in Drake Passage water [1978, rus] J-20641
Features of the oceanographic regime in Prydz Bay (Feb. 1973) [1978, rus] J-20740
Standards for stable isotope measurements in natural compounds [1978, eng] J-20784
Hydrological characteristics and transequatorial transport in the west Indian Ocean [1976, eng] J-20787
Nutrients, plankton, and circulation around New Zealand [1978, eng] J-20805
Amino acids dissolved in sea water as one of the indicators of the physiologic state of an ecosystem [1978, eng] J-20932
Non-biogenic fixed nitrogen in antarctic surface waters [1978, eng] J-20991
Southern ocean temperature gradient near 2C [1977, eng] J-21025
Anatomy of the Antarctic Polar Front in the Drake Passage [1978, eng] J-21048
Tritium distributions in Weddell Sea water masses [1978, eng] J-21049
Tritium and carbon-14 in seawater under the Ross Ice Shelf [1979, eng] J-21100
Direct observation of the oceanic CO2 increase [1978, eng] J-21170
Antiprod 1 cruise, *Marion Dufresne,* 1-28 March, 1977 [1978, fre] J-21272
On the chlorophyll content in the surface water of the Indian and the Antarctic Oceans [1963, eng] J-21278
Chemistry of particulate matter from the south Indian and Antarctic oceans [1978, eng] J-21397

Sea water

CHEMISTRY *(cont.)*

Tritium and carbon-14 distributions in McMurdo Sound, 1977 [1978, eng] **J-21545**

International Weddell Sea Oceanographic Expedition, 1978 [1978, eng] **J-21552**

South Atlantic oceanography [1978, eng] **J-21555**

DENSITY

Numerical simulation of the baroclinic world ocean [1977, rus] **J-19369**

On the abyssal temperatures of the World Oceans [1968, eng] **J-19544**

Circulation of the world ocean: global studies [1977, eng] **J-19782**

Water density field of the world ocean [1978, eng] **J-20605**

Sea-surface temperature, salinity, and density of the Pacific Ocean in summer and in winter [1969, eng] **J-21073**

OPTICAL PROPERTIES

Light-scattering observations in frontal zones [1978, eng] **J-20710**

Antiprod 1 cruise, *Marion Dufresne,* 1-28 March, 1977 [1978, fre] **J-21272**

POLLUTION

Marine biology. Vol.2. Biological productivity of the oeean [1977, rus] **B-20017**

Examination of radioactivity in the crushed rock from the PM-3A nuclear reactor site, McMurdo, Antarctica [1976, eng] **G-20496**

Hydrocarbons in the marine environment. 2. Distribution of *n*-alkanes in the fauna and environment of the subantarctic island of South Georgia [1978, eng] **J-20598**

SALINITY

Organic life in sea ice [1977, eng] **B-20036**

Influence of hydrologic conditions on the distribution of baleen whales [1973, eng] **B-21199**

Logging summary of the Dry Valley Drilling Project [1977, eng] **E-19665**

Heat, mass, and momentum transfer effects on iceberg ablation [1978, eng] **F-20463**

Melting of antarctic icebergs [1978, eng] **F-20705**

On melting icebergs [1978, eng] **F-20907**

Antarctic polar front in the Drake Passage [1978, rus] **I-20638**

Uranium in open ocean: concentration and isotopic composition [1977, eng] **J-19516**

On the abyssal temperatures of the World Oceans [1968, eng] **J-19544**

Salinity field and its transformation in deep ocean waters [1977, rus] **J-19589**

Ross Ice Shelf Project: physical oceanography [1977, eng] **J-19621**

Oceanographic data from McMurdo Sound [1977, eng] **J-19622**

FDRAKE 77 [1977, eng] **J-19624**

Stirring processes within the antarctic Polar Front Zone [1977, eng] **J-19626**

Water mass renewal in the subantarctic zone [1977, eng] **J-19628**

Antarctic oceanographic zonation [1977, eng] **J-20024**

Changes in the hydrological characteristics of the Southern Ocean [1977, eng] **J-20025**

Oceanographic station data collected aboard R/V *Melville* during FDRAKE 75 [1977, eng] **J-20078**

Formation and interleaving of abyssal water masses off Wilkes Land, Antarctica [1978, eng] **J-20161**

Antarctic Intermediate water in the intertropical Atlantic [1975, fre] **J-20197**

Seasonal and annual variations in water temperature and salinity near South Georgia, 1925-1937 [1977, eng] **J-20617**

Fine structure in the Antarctic Polar Front Zone [1978, eng] **J-20708**

Features of the oceanographic regime in Prydz Bay (Feb. 1973) [1978, rus] **J-20740**

Hydrological characteristics and transequatorial transport in the west Indian Ocean [1976, eng] **J-20787**

Southern ocean temperature gradient near 2C [1977, eng] **J-21025**

Sea-surface temperature, salinity, and density of the Pacific Ocean in summer and in winter [1969, eng] **J-21073**

Circulation and melting beneath the Ross Ice Shelf [1979, eng] **J-21098**

Oceanographic data collected aboard R/V *Melville* during January-February 1977 as a part of FDRAKE 77 [1978, eng] **J-21379**

Oceanographic studies in relation to krill fisheries [1978, ger] **J-21445**

Polar Front zone in the western Scotia Sea, winter 1977 [1978, eng] **J-21547**

Temperature and salinity fields under the Ross Ice Shelf [1978, eng] **J-21551**

Physical oceanography of the Ross Sea [1978, eng] **J-21553**

South Atlantic oceanography [1978, eng] **J-21555**

SUSPENSIONS

Oceanic microcosm of particles [1977, eng] **J-19328**

C-13 change analysis of oceanic particulate organic matter [1973, eng] **J-20270**

Silica density of near-bottom Atlantic waters [1974, eng] **J-20519**

Light-scattering observations in frontal zones [1978, eng] **J-20710**

Suspended particulate matter on the southern Argentine shelf [1979, eng] **J-21115**

Copper, zinc and lead minerals suspended in ocean waters [1979, eng] **J-21127**

Chemistry of particulate matter from the south Indian and Antarctic oceans [1978, eng] **J-21397**

THERMAL PROPERTIES

Energy and fresh water production from icebergs [1978, eng] **F-20486**

Icebergs as a heat sink for power generation [1978, eng] **F-20487**

Thermohaline convection in the vicinity of an ice shelf [1977, eng] **J-20034**

Antarctic Intermediate water in the intertropical Atlantic [1975, fre] **J-20197**

Deep antarctic convection west of Maud Rise [1978, eng] **J-21130**

See also: Ocean/Temperature

Sealing

Resource exploitation [1974, eng] **A-20575**

Conservation of southern ocean marine resources [1978, eng] **B-20223**

Penguins, whalers, and sealers: a voyage of discovery [1977, eng] **B-20497**

Voyages to the Kerguelen Islands from 1772-1950 [1976, fre] **D-20348**

Seals

See: Mammalia-Pinnipedia

Search and rescue

Accident-plagued 1974-75 antarctic campaign [1975, spa] **D-20254**

Air operations, *Deep Freeze* '77 [1977, eng] **G-19731**

Aircraft salvage at dome C [1977, eng] **G-19733**

Sediments

University of Waikato 1975 report [1975, eng] **A-20212**

Antarctic radiolaria and the late Tertiary and Quaternary history of the Southern Ocean [1964, eng] **B-19253**

Foraminifera and radiolaria in sediments of the Scotia and Weddell Seas [1967, eng] **B-19519**

Ross Ice Shelf Project environmental impact statement July, 1974 [1978, eng] **B-19979**

Summary of environmental monitoring and impact assessment of the DVDP [1978, eng] **B-19982**

Potential impact on Lake Bonney of activities associated with modeling freshwater antarctic ecosystems [1978, eng] **B-19983**

Distribution of displaced antarctic diatoms in the Argentine Basin [1978, eng] **B-20843**

Circum-Antarctic marine geology [1977, eng] **E-19254**

Early phase of circum-Antarctic ocean basin evolution [1977, eng] **E-19255**

Campbell Plateau and its relationship with the Ross Sea [1977, eng] **E-19258**

Ice-rafted detritus and paleotemperature [1977, eng] **E-19259**

Kerguelen Plateau bathymetry, sediment distribution and crustal structure [1977, eng] **E-19260**

Clay minerals in southeast Indian Ocean sediments [1977, eng] **E-19262**

Geologic history of the Maurice Ewing Bank of the Falkland Plateau [1977, eng] **E-19263**

Sedimentation processes and acoustic stratigraphy in the Bellingshausen Basin [1977, eng] **E-19264**

Southeast Indian Ocean: upper Pleistocene calcareous nannofossil zones and paleoclimatic history [1975, eng] **E-19281**

Geochemistry of antarctic sediments [1975, eng] **E-19283**
Geology of Shackleton Glacier area, Queen Maud Range, Transantarctic Mountains, Antarctica [1969, eng] **E-19287**
Trace metals in Langhovde [1977, jap] **E-19294**
Micromanganese nodules in deep-sea sediments [1976, eng] **E-19315**
Eltanin cruise 55 core data [1977, eng] **E-19353**
ARA *Islas Orcadas* cruise 0775 sediment descriptions [1977, eng] **E-19354**
Distribution of ferromanganese deposits in the World Ocean [1972, eng] **E-19375**
Regional geochemistry of ferromanganese nodules in the world ocean [1972, eng] **E-19376**
Pleistocene manganese pavement production in the Tasman Sea [1972, eng] **E-19377**
Geology of the Scott Glacier and Wisconsin Range area [1967, eng] **E-19398**
Biometry of *Globigerina* [1977, eng] **E-19418**
Stratigraphy and sediments of rocks in the Queen Maud Range area [1968, eng] **E-19462**
Marine manganese deposits [1977, eng] **E-19509**
Sedimentary rocks from Charcot Island [1976, eng] **E-19565**
Sedimentology of Taylor Glacier debris [1976, eng] **E-19578**
Plankton and bottom deposits in a Skarvnes Foreland lake [1975, jap] **E-19585**
Cretaceous *Islas Orcadas* core from the Falkland Plateau [1977, eng] **E-19635**
Late Mesozoic-Cenozoic history of the eastern Falkland Plateau [1977, eng] **E-19636**
Basal sediment ages of *Islas Orcadas* cruise 7 piston cores [1977, eng] **E-19637**
Core recovery: USNS *Eltanin* and ARA *Islas Orcadas* [1977, eng] **E-19639**
Strontium isotopic study of sediment from the Ross Sea [1977, eng] **E-19640**
Sedimentary geochemical processes near the Pacific-Antarctic Ridge [1977, eng] **E-19641**
Mineralogy and chemistry of suspended sediments [1977, eng] **E-19642**
Marine microfossils on the McMurdo Ice Shelf [1977, eng] **E-19644**
Antarctic Marine Geology Research Facility, 1976-1977 [1977, eng] **E-19645**
Analysis of permafrost cores from antarctic dry valleys [1977, eng] **E-19664**
Logging summary of the Dry Valley Drilling Project [1977, eng] **E-19665**
Freshwater lakes in Pleistocene McMurdo Sound [1977, eng] **E-19666**
Palynomorph preservation in the Beacon Supergroup of the Transantarctic Mountains [1977, eng] **E-19670**
Thalassiosira torokina n.sp. (diatom) and its significance in Late Cenozoic biostratigraphy [1977, eng] **E-19671**
Extraction of diatoms from glacial sediments [1977, eng] **E-19672**
Zeolites in South Atlantic deep-sea sediments [1977, eng] **E-19848**
Geochemistry of sediments in the western central Atlantic, DSDP Leg 39 [1977, eng] **E-19849**
General synthesis of Central and South Atlantic drilling results, Leg 39, Deep Sea Drilling Project [1977, eng] **E-19851**
History of sediment lithofacies in the South Atlantic Ocean [1977, eng] **E-19852**
Sediments and sediment processes on high latitude continental shelves [1977, eng] **E-19868**
Indian Ocean sediment distribution since the Late Jurassic [1978, eng] **E-19876**
Last-abundant-appearance of a diatom in the Subantarctic [1978, eng] **E-19988**
Sedimentologic approach to lithosphere plate restoration [1978, eng] **E-19989**
Late Neogene diatom biostratigraphy and paleoecology of the dry valleys and McMurdo Sound, Antarctica [1977, eng] **E-19998**
Paleohydrology of Taylor Valley, Antarctica inferred from pore ice in permafrost core [1977, eng] **E-19999**
Cenozoic subsurface micropaleontology and geology of eastern Taylor Valley, Antarctica [1977, eng] **E-20000**
New occurrences of dish structure in the stratigraphic record [1977, eng] **E-20015**
Antarctic soil studies using a scanning electron microscope [1978, eng] **E-20106**
Paleoenvironmental analysis and correlation of a Cretaceous *Islas Orcadas* core from the Falkland Plateau, Southwest Atlantic [1977, eng] **E-20137**
Cenozoic clay mineralogy [1977, eng] **E-20177**
Sediment distribution around the Bouvet triple junction [1978, eng] **E-20358**
Authigenic gypsum in marine sediments [1978, eng] **E-20359**
Deep-sea manganese nodules in the stratigraphic record: evidence from DSDP cores [1978, eng] **E-20360**
Chronology of glacial sediments in the Taylor Valley [1978, eng] **E-20361**
Water chemistry and sediments near McMurdo Sound [1978, eng] **E-20370**
Significance of gamma-ray, salinity and electrical logs in DVDP boreholes [1978, eng] **E-20371**
Sedimentation conditions in Taylor Valley, Antarctica, from DVDP cores [1978, eng] **E-20372**
Flood basalts, subduction and the break-up of Gondwanaland [1978, eng] **E-20404**
Use of strontium isotopes to study mixing of sediment derived from different sources: the Ross Sea, Antarctica [1978, eng] **E-20513**
Paleoclimatic trends in Early and Middle Pliocene deep-sea sediments of the Antarctic [1978, eng] **E-20552**
Oceanic micropalaeontology [1977, eng] **E-20563**
Selective dissolution of Recent coccoliths in the Atlantic Ocean [1977, eng] **E-20568**
Sedimentological clues to palaeo-oceanography [1977, eng] **E-20569**
Pacific Mesozoic biogeography related to plate tectonics [1977, eng] **E-20601**
Geology of West Antarctica, and mineral deposits in Antarctica [1975, ger] **E-20619**
Coastal geomorphology of high latitudes [1975, eng] **E-20692**
Geological materials collected at RISP Site J9 [1978, eng] **E-20703**
Volcanogenic sediment in the Ross Sea [1977, eng] **E-20753**
Separation of primary ice-rafted debris from lag deposits in the Southern Ocean [1978, eng] **E-20798**
Application of transfer functions to Indian Ocean planktonic foraminifera [1978, eng] **E-20803**
Comparison of radiolarian/planktonic foraminiferal paleooceanography of the subantarctic Indian Ocean [1978, eng] **E-20804**
Densities, porosities, and seismic velocities of some rocks from Victoria Land, Antarctica [1978, eng] **E-20849**
Significance of the Pleistocene occurrence of Helotholus vema in high-latitude sediments [1977, eng] **E-20860**
Major element geochemistry of Ross Sea sediments [1978, eng] **E-20879**
Two patterns of modern global lithogenesis and their methodology [1978, eng] **E-20902**
Phosphatic nodule beds in Victoria and the late Miocene-Pliocene eustatic event [1978, eng] **E-20961**
Miocene glaciomarine sediments from beneath the southern Ross Ice Shelf, Antarctica [1979, eng] **E-21095**
Ross sea region in the Middle Miocene: a glimpse into the past [1979, eng] **E-21096**
Destruction of the Early Cretaceous marginal basin in the Andes of Tierra del Fuego [1977, eng] **E-21116**
Late Cenozoic oxygen and carbon isotopic history and volcanic ash stratigraphy [1979, eng] **E-21180**
Channel Country fluvial sands and associated facies of central-eastern Australia [1979, eng] **E-21248**
Regional distribution of Sr-87/Sr-86 ratios and mixing of sediments in the Ross Sea, Antarctica [1974, eng] **E-21484**
Geology of New Mountain sandstone, South Victoria Land [1974, eng] **E-21495**
Geologic studies in the northern Antarctic Peninsula [1978, eng] **E-21505**
Stratigraphy and sedimentary petrology of the Fremouw Formation [1978, eng] **E-21513**
Ostracoda from the Taylor Formation, the Ross Sea, and the McMurdo Sound region [1978, eng] **E-21518**
Ross Sea glaciations: events in Lower Victoria Valley [1978, eng] **E-21527**
Glacial geologic studies in the McMurdo Sound region [1978, eng] **E-21528**
Islas Orcadas cruise 16 [1978, eng] **E-21558**
Basal sediment ages of Islas Orcadas cruise 11 piston-cores [1978, eng] **E-21559**

Sediments *(cont.)*
Basal sediment ages of ARA *Islas Orcadas* cruise 12 piston cores [1978, eng] **E-21560**
Amino acid racemization in *Islas Orcadas* piston core 12-77-24 [1978, eng] **E-21561**
Planktonic foraminiferal dissolution [1978, eng] **E-21565**
Manganese nodules in the South Georgia Basin and Falkland Plateau [1978, eng] **E-21566**
Miocene glaciomarine sediments from site J-9, Ross Ice Shelf, Antarctica [1978, eng] **E-21573**
Miocene diatom flora from bottom cores at RISP site J-9 [1978, eng] **E-21574**
Late Quaternary paleogeology and paleoclimatology [1978, eng] **E-21575**
Piston coring aboard USCGC *Glacier* in the Ross Sea [1978, eng] **E-21576**
Geochemistry of bottom sediments from the southern Argentine shelf [1978, eng] **E-21577**
Sediments and life under the Ross Ice Shelf (J-P), Antarctica [1978, eng] **E-21586**
Petrographic and paleontological study of lower Tertiary erratics from Quaternary moraines, Black Island, Antarctica [1974, eng] **E-21656**
Glaciological investigations near the ice sheet margin, Wilkes Station, Antarctica [1968, eng] **F-19569**
Glacier history of the McMurdo Sound region [1977, eng] **F-19676**
Glacial deposits and the Taylor Glacier [1978, eng] **F-20319**
Ice-rafted sediments in the Arctic and Antarctic [1976, eng] **F-20402**
Major features of oceanographic development interpreted from microfossils [1977, eng] **J-19257**
Cenozoic and Late Mesozoic paleooceanographic and paleoglacial history [1977, eng] **J-19261**
Oceanography and sedimentology of Drake Passage, Antarctica [1968, eng] **J-19270**
Carbonate compensation depth in the Southern Ocean south of Australia [1975, eng] **J-19274**
Depositional history of the South Atlantic Ocean [1977, eng] **J-19321**
Distribution of dissolved copper in the Pacific [1977, eng] **J-19323**
Oceanic microcosm of particles [1977, eng] **J-19328**
Uranium in open ocean: concentration and isotopic composition [1977, eng] **J-19516**
Attempt at compiling a schematic map of exogenetic geomorphological factors acting on the World ocean bottom [1977, rus] **J-19742**
Sedimentation and Antarctic Bottom Water circulation in the southeast Indian Ocean [1978, eng] **J-19992**
Dissolution kinetics of calcium carbonate in sea water [1978, eng] **J-20065**
Deep sea macrobenthos trophic structure [1976, rus] **J-20230**
Silica in the near-bottom Atlantic [1975, eng] **J-20506**
Bottom water flow through the Kane Gap, Sierra Leone Rise, Atlantic Ocean [1975, eng] **J-20508**
Silica density of near-bottom Atlantic waters [1974, eng] **J-20519**
Outcrops, currents and facies in the east Pacific antarctic zone [1977, fre] **J-20863**
Cenozoic hiatuses in pelagic sediments [1978, eng] **J-21020**
Suspended particulate matter on the southern Argentine shelf [1979, eng] **J-21115**
History of sedimentation and abyssal circulation on the Greater Antilles Outer Ridge [1974, eng] **J-21212**
Abyssal traces and megafauna in the Arctic and Antarctic [1978, eng] **J-21452**
Heat flow in the Weddell Sea [1978, eng] **J-21572**
Soviet research in the Southern Ocean [1978, rus] **J-21693**
Geophysical studies in Antarctic waters with the *M.S. Explora* [1978, eng] **J-21710**
Northward motion of India since the Late Cretaceous [1978, eng] **L-19802**
Marine seismic measurements in the New Zealand region [1977, eng] **L-20014**
Paleomagnetism of Ordovician lamprophyres from Taylor Valley [1977, eng] **L-20266**
See also: Sea water/Suspensions

Seismic exploration
Islas Orcadas cruise 16 [1978, eng] **E-21558**
Ross Ice Shelf Geophysical survey, 1977-1978 [1978, eng] **F-21538**
Geophysical studies in Antarctic waters with the *M.S. Explora* [1978, eng] **J-21710**
Marine seismic measurements in the New Zealand region [1977, eng] **L-20014**
Gravity anomaly distributions and crustal structure [1978, eng] **L-20085**
Seismological bulletin of Syowa Station, Antarctica, 1976 [1978, eng] **L-20092**
Gravimetric measurements in Antarctica and their interpretation [1978, rus] **L-21703**
See also under: Glacier ice; Ice sheet; Shelf ice; Snow

Seismology
Opening of Drake Passage [1977, eng] **E-19256**
Volcanic and seismic activity at Mount Erebus, Antarctica [1976, jap] **E-19278**
Japanese scientific activities in the McMurdo region, 1976-1977 [1977, eng] **E-19653**
Present tectonics and Late Cenozoic evolution of New Zealand [1978, eng] **E-19810**
Magellan Fault Zone [1976, eng] **E-20148**
Intraplate tectonism [1978, eng] **E-21003**
Nature of the oceanic crust [1976, eng] **E-21330**
Ross Ice Shelf geophysical survey, 1976-1977 [1977, eng] **F-19686**
Seismicity of the South Sandwich Islands region [1977, eng] **L-19267**
Antarctic seismological bulletin, Jan.-Sep. 1965, Apr. 1966-Apr. 1972 [1965, eng] **L-19436**
Antarctic seismological bulletin [1972, eng] **L-19532**
Search at South Pole for the pendulum mode of the earth's inner core [1977, eng] **L-19673**
Antarctic neotectonics and its mapping [1969, rus] **L-19854**
Long-wavelength gravity anomalies and intraplate seismicity [1978, eng] **L-19871**
Microseismicity near the Indian Ocean triple junction [1977, eng] **L-19910**
Seismological bulletin of Syowa Station, Antarctica, 1976 [1978, eng] **L-20092**
Seismicity and tectonics of the Ninetyeast Ridge area [1978, eng] **L-20861**
Seismic wave research [1974, eng] **L-21193**
Seismic wave research [1974, eng] **L-21194**
Free oscillations of the Earth and tilt at the South Pole [1978, eng] **L-21526**

MICROSEISMS
On hydrometeorological conditions of microseisms generation [1973, eng] **L-19572**

Sferics
See: Atmospherics

Shelf ice
Meeting on the Ross Ice Shelf Project [1978, eng] **A-21175**
Ross Ice Shelf Project—benthic biology, 1976-1977 [1977, eng] **B-19614**
Environmental impact in Antarctica [1978, eng] **B-19978**
Ross Ice Shelf Project environmental impact statement July, 1974 [1978, eng] **B-19979**
Ice-rafted detritus and paleotemperature [1977, eng] **E-19259**
Marine microfossils on the McMurdo Ice Shelf [1977, eng] **E-19644**
Sediments and sediment processes on high latitude continental shelves [1977, eng] **E-19868**
Last glaciation of the Ross Sea, Antarctica [1977, rus] **E-20156**
Coastal geomorphology of high latitudes [1975, eng] **E-20692**
Ross Ice Shelf Project, 1976-1977 [1977, eng] **F-19347**
Glaciological research in the Antarctic Peninsula [1977, eng] **F-19477**
Ross Ice Shelf Project, 1976-1977 [1977, eng] **F-19685**
Geochemical and isotope studies, Ross Ice Shelf Project [1977, eng] **F-19688**
West Antarctic ice sheet and CO2 greenhouse effect: a threat of disaster [1978, eng] **F-19878**
Less surface accumulation on the Ross Ice Shelf than hitherto assumed [1977, eng] **F-20119**
Icebergs in the Southern Ocean [1976, eng] **F-20247**
Ross Ice Shelf Project (RISP) 1977-78 [1978, eng] **F-20312**
Icebergs - a natural resource [1978, eng] **F-20451**

Remote sensing of iceberg thickness [1978, eng] F-20455
Dissipation of tidal energy by antarctic ice shelves [1978, eng] F-20704
Model for Holocene retreat of the West Antarctic Ice Sheet [1978, eng] F-20857
Moving ice [1978, eng] F-21078
Ross Ice Shelf Project [1979, eng] F-21094
Snow, glaciers, ice sheets [1978, pol] F-21157
Model for melting of ice in sea water [1979, eng] F-21226
Radio echo sounding of the antarctic ice sheet, 1977-78 [1978, eng] F-21533
Ross Ice Shelf Project 1977-78 [1978, eng] F-21535
Glaciological measurements on the Ross Ice Shelf [1978, eng] F-21537
Antarctic ice core recovery [1978, eng] F-21539
Circulation across the ice shelf edge in McMurdo Sound, Antarctica [1977, eng] J-20028
Thermohaline convection in the vicinity of an ice shelf [1977, eng] J-20034
Gravity evidence for a major crustal fracture in eastern Antarctica [1976, eng] L-20696

ACOUSTICAL PROPERTIES
Ultrasonic measurements on ice cores from Ross Ice Shelf [1977, eng] F-19690

AGE DETERMINATION
Stable isotope profile through the Ross Ice Shelf at Little America V, Antarctica [1977, eng] F-20125

BREAKUP
Effect of climatic warming on the West Antarctic ice sheet [1979, eng] F-21404

CALVING
Eleven year chronicle of one of the world's most gigantic icebergs [1978, eng] F-20881

CHEMISTRY
Subsurface measurements of the Ross Ice Shelf, McMurdo Sound, Antarctica [1977, eng] F-19689
Polar ice core analysis [1977, eng] F-19692
Precipitation-forming mechanisms [1977, eng] F-20113
Stable isotope profile through the Ross Ice Shelf at Little America V, Antarctica [1977, eng] F-20125

CONSTRUCTION
Controlled perimeter blasting in cold regions [1975, eng] G-19487

CORES
Ultrasonic measurements on ice cores from Ross Ice Shelf [1977, eng] F-19690
Polar ice core analysis [1977, eng] F-19692
Drilling through shelf ice near Novolazarevskaya Station [1978, rus] F-20724

DEFORMATION
Finite element calculation of ice deformation [1977, eng] F-19677

DISTRIBUTION
Spacecraft in glaciological investigations [1977, rus] F-20157
Geophysical studies in Antarctic waters with the *M.S. Explora* [1978, eng] J-21710

DRILLING
Ross Ice Shelf Project drilling, October-December 1976 [1977, eng] F-19691
Drilling through shelf ice near Novolazarevskaya Station [1978, rus] F-20724
Ice drilling at Site J9 [1978, eng] F-20788
Access hole drilling through the Ross Ice Shelf [1978, eng] F-21536

ELECTRICAL PROPERTIES
Dielectric constant and reflection coefficient of snow surface layers in the McMurdo Ice Shelf [1977, eng] F-19682
Ross Ice Shelf geophysical survey, 1976-1977 [1977, eng] F-19686
Dielectric properties of the Ross Ice Shelf [1978, eng] F-21069
Ross Ice Shelf Geophysical survey, 1977-1978 [1978, eng] F-21538

FLOW
Glaciological measurements on the Ross Ice Shelf [1977, eng] F-19687
Thermodynamic model of an external ice shelf [1976, ger] F-19795

FORMATION
Structure of shore ice along the Amery Ice Shelf [1977, eng] F-19404

HEAT EXCHANGE
Circulation and melting beneath the Ross Ice Shelf [1979, eng] J-21098

MASS BALANCE
Equilibrium state of the eastern half of the Ross Ice Shelf [1978, eng] F-21336

MORPHOLOGY
Using side-looking radar for studying ice undersurfaces [1978, rus] F-20616

PHYSICAL PROPERTIES
Soviet antarctic expedition bulletin, vol. 92, 1976: selected articles [1977, eng] F-19402
Polar ice core analysis [1977, eng] F-19692
Some elements of iceberg technology [1978, eng] F-20454

SEISMIC EXPLORATION
Ross Ice Shelf Geophysical survey, 1977-1978 [1978, eng] F-21538
Geophysical studies in Antarctic waters with the *M.S. Explora* [1978, eng] J-21710

SOUNDINGS
Dielectric constant and reflection coefficient of snow surface layers in the McMurdo Ice Shelf [1977, eng] F-19682
Ross Ice Shelf Geophysical survey, 1977-1978 [1978, eng] F-21538
Antarctic airborne radio echo sounding, 1977-78 [1978, eng] G-21152

STRUCTURE
Antarctic coastal morphology related to underwater ice formation [1977, eng] F-19403
Radiosounding of ice [1976, eng] F-20984

TEMPERATURE
Thermodynamic model of an external ice shelf [1976, ger] F-19795
Drilling through shelf ice near Novolazarevskaya Station [1978, rus] F-20724

THAWING
Effect of glacial ice melting on the Antarctic Surface Water [1979, eng] E-21657
Effect of climatic warming on the West Antarctic ice sheet [1979, eng] F-21404
Ross Ice Shelf sea temperature [1979, eng] J-21097
Circulation and melting beneath the Ross Ice Shelf [1979, eng] J-21098

THICKNESS
Ross Ice Shelf geophysical survey, 1976-1977 [1977, eng] F-19686
Glaciological measurements on the Ross Ice Shelf [1977, eng] F-19687
Subsurface measurements of the Ross Ice Shelf, McMurdo Sound, Antarctica [1977, eng] F-19689
Dielectric properties of the Ross Ice Shelf [1978, eng] F-21069
Equilibrium state of the eastern half of the Ross Ice Shelf [1978, eng] F-21336
Geophysical studies in Antarctic waters with the *M.S. Explora* [1978, eng] J-21710

VOLUME
Equilibrium state of the eastern half of the Ross Ice Shelf [1978, eng] F-21336

Ships
Conceptual design of a polar research ship [1977, eng] G-19726
Ship operations, *Deep Freeze* '77 [1977, eng] G-19734
Operational capability of a polar research ship [1978, eng] G-19754
Icebreaker propulsion systems feasibility study [1967, eng] G-21201
Polar transportation requirements study report, Vol.2 [1968, eng] G-21209
Polar transportation requirements study report. Volume 1 [1968, eng] G-21211
Ship operations, *Deep Freeze* 78 [1978, eng] G-21645
See also: Icebreakers; Research vessels

Adventure
Journal of the Resolution's voyage in 1771-1775 [1967, eng] **D-21181**

Bahía Aguirre
Accident-plagued 1974-75 antarctic campaign [1975, spa] **D-20254**

Burton Island
Deep Freeze 1978 cruise report [1978, eng] **G-19865**

Fuji
Reopening of Showa Station [1978, jap] **G-19769**
Fuji's maiden cruise [1978, jap] **G-19772**

Glacier
Deep Freeze 1979 Cruise Report [1979, eng] **G-21488**

Islas Orcadas
Improvement of scientific systems aboard ARA *Islas Orcadas* [1977, eng] **G-19727**

Mikhail Somov
Biographies of Soviet scientists [1978, rus] **A-20608**

Ob'
Ice conditions encountered by the d/e *Ob'* (1972/73) [1978, rus] **F-20736**
Interaction of the hull of the *Ob'* with compressed ice [1978, rus] **F-20749**
Results of navigability trials of antarctic ice by the *Ob'* [1978, rus] **G-20739**
Resonant hull vibrations of the *Ob'* when traversing ice cake [1978, rus] **G-20748**
Experimental work on ice vibration in the *Ob'* [1978, rus] **G-20750**

Polar Star
Polar Star—the second time around [1978, eng] **G-20856**
Polar icebreaker cruise report, Operation *Deep Freeze* '79 [1979, eng] **G-21256**
Deep Freeze 1979 Cruise Report [1979, eng] **G-21488**

Pourquoi-pas
Voyage of the *Pourquoi-pas,* 1908-1910 [1978, eng] **D-20850**

Professor Vize
Biographies of Soviet scientists [1978, rus] **A-20608**

Professor Zubov
Biographies of Soviet scientists [1978, rus] **A-20608**
Ice conditions encountered by the research vessel *Professor Zubov* (Dec. 1972-Mar. 1973) [1978, rus] **F-20737**

Resolution
Journal of the Resolution's voyage in 1771-1775 [1967, eng] **D-21181**

Soya
Immortal *Soya*--antarctic research vessel [1978, jap] **G-19765**
Navigation of *Soya* in the Antarctic Ocean [1978, jap] **G-19766**

Site selection
First landing at Ongul Island [1978, jap] **A-20433**
Geodetic work in Alasheyev Bight [1968, eng] **C-20341**
Results of ice observations in Alasheyev Bight [1968, eng] **F-20336**
Runway site survey, Pensacola Mountains, Antarctica [1977, eng] **G-19368**
U.S. Antarctic Support study extension: Case 10—McMurdo Station-Outer Williams Field military construction and operation [1972, eng] **G-20304**
U.S. Antarctic support study extension: Case 11 [1972, eng] **G-20305**
Site selection for Molodezhnaya Station [1968, eng] **G-20334**
Organization of the new Soviet station Molodezhnaya [1968, eng] **G-20343**
Hydrographic investigations of approaches to the Antarctic station Molodezhnaya [1968, eng] **J-20338**

Skis
Snow transport equipment model 1000 towed snowplow carrier [1974, eng] **G-20817**

Skuas
See: Aves-Charadriiformes

Snow
Snow [1978, eng] **A-19862**
Summary of environmental monitoring and impact assessment of the DVDP [1978, eng] **B-19982**
History and recent advances in the study of ice biota [1977, eng] **B-20035**
Microbial life at low temperatures: ecological aspects [1978, eng] **B-21169**
Yamato-74 meteorites [1978, eng] **E-19917**
Program and instructions on the compilation of the world atlas of snow and ice resources [1977, rus] **F-19577**
Glaciological studies in Mizuho Plateau, East Antarctica, 1969-1975 [1978, eng] **F-19819**
Glaciological research program on Mizuho Plateau, 1969-1975 [1978, eng] **F-19820**
Mass budget of the Mizuho Plateau ice sheet [1978, eng] **F-19840**
Snow and glacier studies [1975, ger] **F-20398**
Activities of the Grenoble Glaciological Laboratory, 1976 [1977, fre] **F-20423**
Large-scale numerical model of sea ice [1979, eng] **F-21132**
Snow, glaciers, ice sheets [1978, pol] **F-21157**
Recent changes in snow and ice [1978, eng] **F-21190**
Glaciological field stations, Parts 1 and 2 [1979, eng] **F-21291**
Ice-coring project at Mizuho Station, East Antarctica, 1970-1975 [1978, eng] **F-21297**
905-meter deep core drilling at dome C and related surface programs [1978, eng] **F-21532**
Ice excavation machine [1977, eng] **G-20776**
Road transitions between land, snow and ice [1975, eng] **G-20815**
Polar Sub-programme [1978, eng] **I-20823**
Climatic change [1978, eng] **I-21186**
Global influences of mankind on the climate [1978, eng] **I-21191**

ABLATION
Accumulation and ablation at Syowa Station [1978, eng] **F-19830**

ACCUMULATION
Some problems of photogrammetry in Antarctica [1976, eng] **C-21393**
Snow accumulation, conductance and temperature inland from Halley Bay [1976, eng] **F-19545**
Snow drifts in polar regions [1977, eng] **F-19758**
Accumulation and ablation at Syowa Station [1978, eng] **F-19830**
Distribution of snow accumulation in Mizuho Plateau [1978, eng] **F-19831**
Study of formation of a surface snow layer [1978, eng] **F-19832**
Stratigraphic studies of the snow cover in Mizuho Plateau [1978, eng] **F-19833**
Mass input in the Shirase and Soya drainage basins [1978, eng] **F-19834**
Glaciological survey in 1976-1977 [1978, eng] **F-20077**
Distribution of artificial tritium in firn samples from East Antarctica [1977, eng] **F-20116**
Accumulation of snow and radioactive debris in Antarctica [1977, eng] **F-20117**
New Zealand work at Vostok Station [1978, eng] **F-20308**
Long-term accumulation characteristics at Vostok Station, Antarctica [1978, rus] **F-20615**
Snow accumulation from 1970 to 1973 around Vostok Station [1978, rus] **F-20727**
Snow accumulation around Molodezhnaya Station [1978, rus] **F-20765**
Stratigraphic analyses of firn and ice at Mizuho Station [1978, eng] **F-21299**
Glaciological investigations along the Mirny-Pionerskaya-Dome C profile [1978, rus] **F-21389**
Glaciology near Byrd Station [1978, eng] **F-21534**
Role of precipitation processes in chemistry of polar snows [1976, eng] **F-21672**

ACOUSTICAL PROPERTIES
Anisotropy of ultrasonic wave velocities in Mizuho cores [1978, eng] **F-21305**

ALBEDO
Thermal response to albedo reduction on antarctic snow—modeling results [1977, eng] **F-19680**

Atmospheric processes and energy transfers at the South Pole [1977, eng] I-19700
Climatonomical modeling of temperature response to dust contamination of antarctic snow surfaces [1977, eng] I-21377

BIBLIOGRAPHIES
Annotated list of Soviet literature on glaciology for 1975 [1978, rus] F-21391

CHEMICAL ANALYSIS
Investigating atmospheric aerosol transfer by means of geochemical study of the antarctic ice sheet [1976, rus] F-19285

CHEMISTRY
Mercury profile of Mizuho ice sheet [1977, jap] F-19293
Investigations at dome C in the austral summer of 1976-1977 [1977, eng] F-19678
Nitrogen in south polar ice and snow: tool to measure past solar, auroral, and cosmic ray activities [1977, eng] F-19679
Stratigraphic studies of the snow cover in Mizuho Plateau [1978, eng] F-19833
Oxygen isotopic composition of the surface snow in Mizuho Plateau [1978, eng] F-19838
Chemical constituents in the surface snow in Mizuho Plateau [1978, eng] F-19839
Factors controlling oxygen isotopic composition of fallen snow in Antarctica [1978, eng] F-19880
Non-biogenic fixed nitrogen in Antarctica and some ecological implications [1978, eng] F-19915
Chemical composition of an antarctic snow profile [1973, eng] F-20055
International Symposium on Isotopes and Impurities in Snow and Ice, 1975 [1977, eng] F-20107
Processes responsible for the trace content in precipitation [1977, eng] F-20111
Precipitation-forming mechanisms [1977, eng] F-20113
Search for organochlorine residues in antarctic snow [1977, eng] F-20114
Distribution of mean surface stable isotope values [1977, eng] F-20115
Accumulation of snow and radioactive debris in Antarctica [1977, eng] F-20117
Trace element content in East Antarctica snow samples [1977, eng] F-20118
Filtering effect of snow [1977, eng] F-20120
Stable isotope variations in snow and ice at Vostok, Antarctica [1977, eng] F-20121
New Zealand work at Vostok Station [1978, eng] F-20308
View of the formation of saline waters in the dry valleys [1978, eng] F-20374
Natural enrichment of elements in snow [1978, eng] F-20391
Snow chemistry and atmospheric processes on the Ross Ice Shelf [1978, eng] F-20393
Sulfate in antarctic snow [1978, eng] F-20505
Chemistry of 700 years of precipitation at Dye 3, Greenland [1975, eng] F-20599
Chemical elements in snow in various locations [1978, eng] F-20882
Sulfate content in the antarctic ice cap [1977, eng] F-21122
Potentiometric microdetermination of sulfate ions [1978, fre] F-21159
Trace metals in antarctic snows since 1914 [1979, eng] F-21255
Influence of aerosols on geochemistry of polar snow [1978, fre] F-21280
Chemistry of ice cores from Mizuho Station [1978, eng] F-21311
Some features of formation of oxygen isotopic composition in East Antarctic snow cover [1978, rus] F-21486
Fixed nitrogen in antarctic ice and snow [1978, eng] F-21530
Antarctic ice core recovery [1978, eng] F-21539
Role of precipitation processes in chemistry of polar snows [1976, eng] F-21672
Atmosphere's role in chemical composition of Ross Ice Shelf snow [1977, eng] I-19697
Trace elements in the antarctic atmosphere [1978, eng] I-21616

CONSTRUCTION
Snow transport equipment model 1000 towed snowplow carrier [1974, eng] G-20817

CRYSTALS
Snow crystals at the South Pole [1975, jap] F-20051
Ice crystals in the Antarctic atmosphere [1976, eng] F-20307
Role of precipitation processes in chemistry of polar snows [1976, eng] F-21672

DEFORMATION
Ice deformation in a borehole near Vostok [1978, rus] F-20725

DENSITY
Glaciological survey in 1976-1977 [1978, eng] F-20077
Glaciological studies on the IAGP program in a new area of Eastern Antarctica [1977, rus] F-20172
Stratigraphic analyses of firn and ice at Mizuho Station [1978, eng] F-21299
Glaciological investigations along the Mirny-Pionerskaya-Dome C profile [1978, rus] F-21389
Methods and results of studying radiation properties of snow-firn covers [1977, rus] I-20426

DISTRIBUTION
Development of moss-peat banks in relation to changing climate and ice cover on Signy Island in the maritime Antarctic [1976, eng] B-19552
Satellite data on snow and ice in the Arctic and Antarctic regions [1977, jap] F-19818
Distribution of snow accumulation in Mizuho Plateau [1978, eng] F-19831
Microwave radiometry of ice and snow [1975, eng] F-20238

DRIFTING
Drifting snow at Mizuho Camp [1977, eng] F-19520
Snow drifts in polar regions [1977, eng] F-19758
Controlling factors of drifting snow [1978, eng] F-19827
Flow-visualization by means of soap bubbles on snowdrift around the huts at Syowa Station [1978, jap] F-20824
Visibility in blowing snow and applications in traffic operations [1978, eng] F-21715

ELECTRICAL PROPERTIES
Snow accumulation, conductance and temperature inland from Halley Bay [1976, eng] F-19545
Dielectric constant and reflection coefficient of snow surface layers in the McMurdo Ice Shelf [1977, eng] F-19682

INSTRUMENTS
Controlling factors of drifting snow [1978, eng] F-19827
Statistical analysis to estimate snow temperature and mean crystal radius [1978, eng] F-20801
Inclination of the hole drilled by JARE-13 [1978, eng] F-21313

MASS BALANCE
Mass input in the Shirase and Soya drainage basins [1978, eng] F-19834

MECHANICAL PROPERTIES
Axial double point-load tests on snow and ice [1978, eng] F-20067
Critical look at the iceberg utilization project [1978, eng] F-20453
Permeability and elasticity of snow and firn at Mizuho Station [1978, eng] F-21301

PHYSICAL PROPERTIES
Critical look at the iceberg utilization project [1978, eng] F-20453
Short-wave radiation attenuation by ice and snow [1977, rus] F-21138

POLLUTION
Airborne particles and electric fields near the ground in Antarctica [1978, eng] B-21602
Search for organochlorine residues in antarctic snow [1977, eng] F-20114
Influence of aerosols on geochemistry of polar snow [1978, fre] F-21280
Climatonomical modeling of temperature response to dust contamination of antarctic snow surfaces [1977, eng] I-21377

RADIATION
Short-wave radiation attenuation by ice and snow [1977, rus] F-21138
Spectroscopic studies at McMurdo, South Pole, and Siple stations [1978, eng] I-21611
Gamma ray activity from radioactive fallout at the South Pole [1978, eng] I-21620

SEISMIC EXPLORATION
Results of seismic observations of dynamic glacier processes at Mirnyy [1978, rus] **F-20772**

STRATIGRAPHY
Distribution of surface features of snow cover in Mizuho Plateau [1978, eng] **F-19824**
Study of formation of a surface snow layer [1978, eng] **F-19832**
Stratigraphic studies of the snow cover in Mizuho Plateau [1978, eng] **F-19833**
Mass input in the Shirase and Soya drainage basins [1978, eng] **F-19834**
Glaciological studies on the IAGP program in a new area of Eastern Antarctica [1977, rus] **F-20172**
Compiled stratigraphic data from cores drilled at Mizuho Station [1978, eng] **F-21307**

STRUCTURE
Statistical analysis to estimate snow temperature and mean crystal radius [1978, eng] **F-20801**
Methods and results of studying radiation properties of snow-firn covers [1977, rus] **I-20426**

SUBLIMATION
Vapor pressure and sublimation in Antarctica [1978, eng] **I-20082**

SURFACE FEATURES
Distribution of surface features of snow cover in Mizuho Plateau [1978, eng] **F-19824**
Distribution of 10 m snow temperatures in Mizuho Plateau [1978, eng] **F-19825**
Controlling factors of drifting snow [1978, eng] **F-19827**
Study of formation of a surface snow layer [1978, eng] **F-19832**
Glaciological studies on the IAGP program in a new area of Eastern Antarctica [1977, rus] **F-20172**

TEMPERATURE
Snow accumulation, conductance and temperature inland from Halley Bay [1976, eng] **F-19545**
Distribution of 10 m snow temperatures in Mizuho Plateau [1978, eng] **F-19825**
Glaciological survey in 1976-1977 [1978, eng] **F-20077**
Glaciological studies on the IAGP program in a new area of Eastern Antarctica [1977, rus] **F-20172**
Statistical analysis to estimate snow temperature and mean crystal radius [1978, eng] **F-20801**
Temperature profile in the drilled hole [1978, eng] **F-21312**
Glaciological investigations along the Mirny-Pionerskaya-Dome C profile [1978, rus] **F-21389**

THAWING
Snowmelt as a water source for antarctic microorganisms [1978, eng] **B-21601**
Meltwater near Showa Station [1977, eng] **F-19522**

VARIATIONS
Recent decline in available moisture in northern Victoria Land, Antarctica [1978, eng] **F-21339**

Soil
See: Pedology

Solar activity
Fall meeting 1977, abstracts [1977, eng] **A-21363**
Nitrogen in south polar ice and snow: tool to measure past solar, auroral, and cosmic ray activities [1977, eng] **F-19679**
Use of floating solar collectors in processing iceberg water [1978, eng] **F-20473**
Importance of the Antarctic in atmospheric sciences [1977, eng] **K-19480**
Magnetic quiet-day solar daily variations in magnetically conjugate regions [1977, eng] **K-19571**
Oscillations of the sun and the geomagnetic field [1978, eng] **K-20630**
Effect of the total magnetic field of the sun on cosmic-ray modulation in the mid-latitude stratosphere [1978, eng] **K-21349**
Magnetic quiet-day solar daily variations in magnetically conjugate regions [1977, eng] **K-21398**
Radiospectrograph used in the ARAKS experiment [1978, eng] **K-21424**
Atmospheric electricity and solar magnetism at Vostok [1978, rus] **K-21461**

CORPUSCULAR RADIATION
Auroral research applied to radio communication [1966, ger] **K-19453**
Proton distribution in polar caps, Sep. 7, 1973 [1976, rus] **K-19496**
Vertical ionospheric soundings at Molodezhnaya Station [1977, rus] **K-19889**
Observations of the entry of solar protons into the magnetosphere by use of riometers [1974, eng] **K-20136**
SD current direction changes in the vicinity of geomagnetic poles [1971, eng] **K-21088**

COSMIC RAY EVENTS
Cosmic ray intensity variations [1977, eng] **K-19722**
North-south asymmetry in the intensity of polar cap absorption [1977, eng] **K-20079**
Cosmic rays [1978, eng] **K-20292**
Solar-polar coronal holes and the north-south cosmic ray gradient [1978, eng] **K-20627**
Symmetrical equator-pole anisotropy during an unusual cosmic ray storm [1978, eng] **K-20628**
PCA variations during shock-wave proton precipitation July 24-25, 1970 [1977, rus] **K-21137**
North-south anisotropy of cosmic rays [1975, eng] **K-21165**
Cosmic ray intensity variations [1978, eng] **K-21635**

CYCLES
Using macrocirculation to produce experimental three-day weather and pressure field forecasts for Antarctica [1978, rus] **I-21455**
Periodicity in Es occurrence probability at the polar caps [1977, rus] **K-20167**

FLARES
Stratospheric electric fields [1979, eng] **K-21133**
Penetration of solar flare protons into the polar caps [1975, eng] **K-21161**

SUNSPOTS
Vertical ionospheric soundings at Molodezhnaya Station [1977, rus] **K-19889**
Geomagnetic L-variation at SANAE, Antarctica [1978, eng] **L-21342**

Solar radiation
See: Radiation/Solar

Soundings
See under: Glacier ice; Ice; Ice sheet; Icebergs; Shelf ice

Spacecraft
See: Satellites (artificial)

Specimen collections

BIOLOGICAL
Revision of the Antarctic and southern genus *Notothenia* [1966, eng] **B-19391**
Foliose and fruticose lichens from Tristan da Cunha [1977, eng] **B-19455**
Studies in polar biology [1977, eng] **B-19618**
Parasitic Copepoda of fishes [1965, eng] **B-19955**
Cladocera, Ostracoda, and freshwater Copepoda [1967, eng] **B-19956**
Oligochaeta from subantarctic islands [1968, eng] **B-19957**
Cestodes from fish, birds and whales [1969, eng] **B-19958**
Ophiuroidea [1967, eng] **B-19959**
Catalog of entomological types in the Bishop Museum [1978, eng] **B-20995**
Report of guest on Antarctic Whaling Expedition No.30 [1976, eng] **B-21016**
Subantarctic Pteridophyta: observations and new records [1978, eng] **B-21357**
Polar biological specimens [1978, eng] **B-21641**
Antarctic and southernmost South American fossil echinoids [1977, eng] **E-19643**
Cynodont reptiles from the Triassic of Antarctica [1977, eng] **E-19667**

GEOLOGICAL
Geologic studies in the South Orkney Islands [1977, eng] **E-19655**
Yamato-74 meteorites [1978, eng] **E-19917**
Collection of Yamato meteorites, 1975-76 [1978, eng] **E-19918**

First meteorites found in Victoria Land, Dec. 1976 and Jan. 1977 [1978, eng] **E-19919**
Summary of field activities of the Dry Valley Drilling Project 1972-1973 and 1973-1974 [1978, eng] **E-19981**
Curator finds rare meteorites in antarctic group [1978, eng] **E-21017**
New Triassic vertebrates from the Fremouw Formation [1978, eng] **E-21514**
Processing and distributing antarctic meteorites collected during 1977-78 [1978, eng] **E-21638**

Spermatophyta

BREEDING CYCLES AND REPRODUCTION
Pseudo-vivipary in Fuegian and Falkland Islands grasses [1976, eng] **B-19553**

ECOLOGY
Altitudinal distribution and phenology of Marion Island vascular plants [1970, eng] **B-20586**

GEOGRAPHIC DISTRIBUTION
Geobotanical regions of the Arctic and Antarctic [1977, rus] **B-20007**

MORPHOLOGY
Phylica nitida on Amsterdam Island [1976, fre] **B-20346**

Sphenisciformes
See: Aves-Sphenisciformes

Sponges
See: Porifera

Stations
See: Construction/Station; Research facilities; Weather stations. *Also individual stations by name in GEOGRAPHIC INDEX*

Stratigraphy
Guembelitria samwelli Jenkins, a new Oligocene species [1978, eng] **B-20537**
Permian and Triassic Beacon rocks near Beardmore Glacier [1968, eng] **E-19250**
Early phase of circum-Antarctic ocean basin evolution [1977, eng] **E-19255**
Campbell Plateau and its relationship with the Ross Sea [1977, eng] **E-19258**
Geologic history of the Maurice Ewing Bank of the Falkland Plateau [1977, eng] **E-19263**
Sedimentation processes and acoustic stratigraphy in the Bellingshausen Basin [1977, eng] **E-19264**
Geology of Marie Byrd Land and Eights Coast [1976, rus] **E-19277**
Southeast Indian Ocean: upper Pleistocene calcareous nannofossil zones and paleoclimatic history [1975, eng] **E-19281**
Biostratigraphy and paleoecology of Neogene and Oligocene silicoflagellates [1974, eng] **E-19282**
Geology of Shackleton Glacier area, Queen Maud Range, Transantarctic Mountains, Antarctica [1969, eng] **E-19287**
Evolution of the Scotia Arc [1977, eng] **E-19316**
Emplacement of giant ophiolite nappes. 1. Mesozoic-Cenozoic examples [1977, eng] **E-19317**
Geology of the Scott Glacier and Wisconsin Range area [1967, eng] **E-19398**
Paleoclimatic history in deep-sea cores [1972, eng] **E-19423**
Stratigraphy and sediments of rocks in the Queen Maud Range area [1968, eng] **E-19462**
Potassium-argon ages of schists from Chatham Island [1977, eng] **E-19467**
Geology of Antarctica: a review [1977, eng] **E-19476**
Geological structure of the Transantarctic Mts. [1964, eng] **E-19508**
Geochronology in relation to the stratigraphy of the Antarctic Peninsula [1976, eng] **E-19548**
Late Mesozoic-Cenozoic history of the eastern Falkland Plateau [1977, eng] **E-19636**
Basal sediment ages of *Islas Orcadas* cruise 7 piston cores [1977, eng] **E-19637**
Analysis of permafrost cores from antarctic dry valleys [1977, eng] **E-19664**
Palynomorph preservation in the Beacon Supergroup of the Transantarctic Mountains [1977, eng] **E-19670**
Thalassiosira torokina n.sp. (diatom) and its significance in Late Cenozoic biostratigraphy [1977, eng] **E-19671**
Geologic map of Antarctica: 1:2,500,000 [1977, fre] **E-19797**
Volcanic rocks of the Chatham Islands [1977, eng] **E-19805**
Stratigraphic relations between Argentina and Antarctica [1975, spa] **E-19860**
Early Tertiary geology of the Indian Ocean region [1978, eng] **E-19874**
Indian Ocean sediment distribution since the Late Jurassic [1978, eng] **E-19876**
Biostratigraphy of Seymour Island, Antarctica [1978, eng] **E-19939**
Last-abundant-appearance of a diatom in the Subantarctic [1978, eng] **E-19988**
Sedimentologic approach to lithosphere plate restoration [1978, eng] **E-19989**
Late Neogene diatom biostratigraphy and paleoecology of the dry valleys and McMurdo Sound, Antarctica [1977, eng] **E-19998**
Cenozoic subsurface micropaleontology and geology of eastern Taylor Valley, Antarctica [1977, eng] **E-20000**
New occurrences of dish structure in the stratigraphic record [1977, eng] **E-20015**
Geology of the Dufek intrusion in Antarctica [1975, jap] **E-20050**
Age and position of the Ellsworth Mountains crustal fragment, Antarctica [1977, eng] **E-20090**
Late Cambrian Brachiopoda, Mollusca, and Trilobita from northern Victoria Land, Antarctica [1976, eng] **E-20142**
Stratigraphy of the Taylor and lower Victoria groups [1977, eng] **E-20175**
Cenozoic clay mineralogy [1977, eng] **E-20177**
Geology of the Antarctic Peninsula [1978, eng] **E-20236**
Deep-sea manganese nodules in the stratigraphic record: evidence from DSDP cores [1978, eng] **E-20360**
Carboniferous and Permian palynostratigraphy in Australia and Antarctica: a review [1977, eng] **E-20396**
Spreading history of the eastern Indian Ocean [1978, eng] **E-20529**
K-Ar ages of Bounty Islands granites and metasediments [1978, eng] **E-20541**
Campbell Island geology [1978, eng] **E-20542**
Three new species of *Pulvinites* [1978, eng] **E-20547**
Paleoclimatic trends in Early and Middle Pliocene deep-sea sediments of the Antarctic [1978, eng] **E-20552**
Geological materials collected at RISP Site J9 [1978, eng] **E-20703**
Beacon Supergroup in the Allan Hills, central Victoria Land, Antarctica [1977, eng] **E-20752**
Palynostratigraphy of the Victoria group of South Victoria Land, Antarctica [1977, eng] **E-20756**
Comparison of radiolarian/planktonic foraminiferal paleooceanography of the subantarctic Indian Ocean [1978, eng] **E-20804**
Stratigraphy of the New Mountain Sandstone [1978, eng] **E-20848**
Densities, porosities, and seismic velocities of some rocks from Victoria Land, Antarctica [1978, eng] **E-20849**
Significance of the Pleistocene occurrence of Helotholus vema in high-latitude sediments [1977, eng] **E-20860**
Valanginian fauna in the Byers Peninsula, Livingston Island [1976, spa] **E-21085**
Late Cenozoic oxygen and carbon isotopic history and volcanic ash stratigraphy [1979, eng] **E-21180**
Late Neogene chronostratigraphy, biostratigraphy, biochronology and paleoclimatology [1973, eng] **E-21195**
Compositions of three tephra layers from the Byrd Station ice core, Antarctica [1978, eng] **E-21239**
Fossil marginal basin in the southern Andes [1974, eng] **E-21327**
Model for ocean-floor metamorphism, seismic layering and magnetism [1976, eng] **E-21328**
Nature of the oceanic crust [1976, eng] **E-21330**
Marginal basin "rocas verdes" complex from southern Chile [1976, eng] **E-21332**
Mesozoic volcano-tectonic rift zone in southernmost South America [1978, eng] **E-21333**
Pillow talk [1978, eng] **E-21334**
Quaternary stratigraphy and glacial history of the Lower Taylor Valley, Antarctica [1978, eng] **E-21354**
Geology of New Mountain sandstone, South Victoria Land [1974, eng] **E-21495**
Stratigraphical studies in Orville Coast and eastern Ellsworth Land [1978, eng] **E-21502**

Stratigraphy *(cont.)*
Geologic studies in the northern Antarctic Peninsula [1978, eng] **E-21505**
Palynologic studies in the Transantarctic Mountains [1978, eng] **E-21510**
Stratigraphy and sedimentary petrology of the Fremouw Formation [1978, eng] **E-21513**
Basal sediment ages of Islas Orcadas cruise 11 piston-cores [1978, eng] **E-21559**
Basal sediment ages of ARA *Islas Orcadas* cruise 12 piston cores [1978, eng] **E-21560**
Cenozoic microfossil datums in deep-sea sediments [1978, eng] **E-21563**
Paleontology and paleoenvironment of the Southwest Atlantic Ocean Basin [1978, eng] **E-21564**
Miocene glaciomarine sediments from site J-9, Ross Ice Shelf, Antarctica [1978, eng] **E-21573**
Miocene diatom flora from bottom cores at RISP site J-9 [1978, eng] **E-21574**
Late Quaternary paleogeology and paleoclimatology [1978, eng] **E-21575**
Piston coring aboard USCGC *Glacier* in the Ross Sea [1978, eng] **E-21576**
Antarctic metamorphic facies [1978, rus] **E-21700**
Discovery of first Middle Cambrian trilobites in the Shackleton Range [1978, rus] **E-21701**
Microparticle analysis of the 101-meter South Pole ice core [1977, eng] **F-19681**
Less surface accumulation on the Ross Ice Shelf than hitherto assumed [1977, eng] **F-20119**
Stable isotope variations in snow and ice at Vostok, Antarctica [1977, eng] **F-20121**
Stable isotope profile through the Ross Ice Shelf at Little America V, Antarctica [1977, eng] **F-20125**
Major features of oceanographic development interpreted from microfossils [1977, eng] **J-19257**
Cenozoic and Late Mesozoie paleooceanographic and paleoglacial history [1977, eng] **J-19261**
Carbonate compensation depth in the Southern Ocean south of Australia [1975, eng] **J-19274**
Depositional history of the South Atlantic Ocean [1977, eng] **J-19321**
Cenozoic hiatuses in pelagic sediments [1978, eng] **J-21020**
Paleomagnetic studies on DVDP cores from Taylor Valley [1978, eng] **L-20364**
See also under: Firn; Glacier ice; Ice; Ice sheet; Snow

Stratosphere
Sulfate in antarctic snow [1978, eng] **F-20505**
Measurements of trace gases and aerosols in the antarctic stratosphere [1977, eng] **I-19699**
Meteorological research aboard instrumented LC-130R airplane and at the South Pole [1977, eng] **I-19704**
On the nature of persistent stratospheric clouds in the Antarctic [1977, eng] **I-19816**
Antarctic atmosphere as seen by satellites [1977, eng] **I-20283**
Atmospheric distribution of nitrous oxide [1977, eng] **I-20498**
Balloon observations of a particle layer injected by a stratospheric aircraft at 23 km [1978, eng] **I-20625**
Study of the lower stratospheric thermal stucture and total ozone from Nimbus-4 IRIS [1976, eng] **I-20786**
Pilot study of concomitant changes in total ozone and atmospheric general circulation [1978, eng] **I-21004**
Stratospheric NO2 in the antarctic winter [1978, eng] **I-21171**
Stratospheric measurements of methane at several latitudes [1978, eng] **I-21172**
Long-term effect on the ozone layer of nitrogen oxides produced by thermonuclear explosions in the atmosphere [1978, eng] **I-21275**
Observed zonal wind cycle in the southern hemisphere stratosphere [1979, eng] **I-21314**
Trace gas and aerosol measurements to 30 km in Antarctica [1978, eng] **I-21615**
Balloon sounding the stratospheric sulfate aerosol layer [1976, eng] **I-21667**
Stratospheric electric fields [1979, eng] **K-21133**
Measurements of electric field and auroral X-rays with antarctic balloons [1979, jap] **K-21682**

SUDDEN WARMING
Ozone measurements at British Antarctic Survey stations [1977, eng] **I-19479**
Meteorological observations at Showa, 1974 [1977, eng] **I-19526**
Winter stratospheric warmings and springtime reversals in the Antarctic and Arctic [1968, eng] **I-20388**
Stratospheric warmings: observations and theory [1978, eng] **I-21002**

Struetural geology
Campbell Plateau and its relationship with the Ross Sea [1977, eng] **E-19258**
Geology of Marie Byrd Land and Eights Coast [1976, rus] **E-19277**
Geology of Shackleton Glacier area, Queen Maud Range, Transantarctic Mountains, Antarctica [1969, eng] **E-19287**
Evolution of the Scotia Arc [1977, eng] **E-19316**
Deformation, serpentinization and emplacement of a dunite complex [1977, eng] **E-19322**
Geology of the Scott Glacier and Wisconsin Range area [1967, eng] **E-19398**
Geological structure of the Transantarctic Mts. [1964, eng] **E-19508**
Geology of the Fosdick Mountains, Marie Byrd Land, West Antarctica [1969, eng] **E-19543**
Geologic studies in the South Orkney Islands [1977, eng] **E-19655**
Major rockfall and debris slide on the Lyell Glacier, South Georgia [1978, eng] **E-20009**
Magellan Fault Zone [1976, eng] **E-20148**
Volcanic history in Marie Byrd Land [1976, eng] **E-20149**
Precambrian basement at Molodezhnaya Station, East Antarctica [1978, eng] **E-20181**
Antarctica, a key to the understanding of the evolution of Gondwanaland [1977, eng] **E-20280**
Antarctic geological map series. Sheet 11 - Cape Hinode [1978, eng] **E-20301**
Antarctic geological map series. Sheet 17—Northern Yamato Mountains (1) Mt. Fukushima [1978, eng] **E-20302**
Geology of the region between the Renegar and Blue Glaciers [1978, eng] **E-20320**
Geology of the Gerlache Strait, 64-65S [1976, spa] **E-21009**
Destruction of the Early Cretaceous marginal basin in the Andes of Tierra del Fuego [1977, eng] **E-21116**
Naleds in the Altais at mid-altitude [1979, eng] **E-21320**
Coastal geology of the Darwin Mountains and Tierra del Fuego [1977, spa] **E-21335**
Geologic reconnaissance of the Pre-Late Jurassic basement: Patagonian Andes [1978, eng] **E-21504**
Comparative study of bedrock in the Adelaide (Australia) and Ross (Antarctica) geosynclinal areas [1978, rus] **E-21698**
Comparison of geological structure of southeast Indostan and Sri Lanka with Enderby Land, Mac. Robertson Land and Princess Elizabeth Land in East Antarctica [1978, rus] **E-21699**
Antarctic airborne radio echo sounding, 1977-78 [1978, eng] **G-21152**
Gravity evidence for a major crustal fracture in eastern Antarctica [1976, eng] **L-20696**
See also: Tectonics

Strueture
See under: Firn; Glacier ice; Ice; Ice sheet; Icebergs; Sea ice; Shelf ice; Snow

Subglacial topography
Subglacial geomorphology of Mizuho Plateau and around Yamato Mountains, East Antarctica [1976, eng] **E-19331**
Geological structure of the Transantarctic Mts. [1964, eng] **E-19508**
Investigation of a subglacial lake near Molodezhnaya Station [1977, rus] **E-19796**
Bedrock topography deduced from radar echoes [1978, eng] **E-20084**
Glacial geomorphology of the Lambert Glacier and its surrounding mountains [1977, eng] **E-21384**
Ross Sea glaciations: events in Lower Victoria Valley [1978, eng] **E-21527**
International studies of ice sheet and bedrock [1977, eng] **F-20279**
Bedrock topography of Ampère Glacier (Kerguelen Islands, T.A.A.F.) [1978, fre] **F-20732**

Radio echo sounding of the antarctic ice sheet, 1977-78 [1978, eng] **F-21533**
Antarctic airborne radio echo sounding, 1977-78 [1978, eng] **G-21152**
Gravity anomalies and bedrock relief in Mizuho Plateau [1978, eng] **L-19823**
Gravity anomaly distributions and crustal structure [1978, eng] **L-20085**
Gravimetric measurements in Antarctica and their interpretation [1978, rus] **L-21703**

Sublimation
See under: Snow

Submarine geology
Offshore development for oil and gas in Antarctica [1978, eng] **A-19756**
Circum-Antarctic marine geology [1977, eng] **E-19254**
Early phase of circum-Antarctic ocean basin evolution [1977, eng] **E-19255**
Campbell Plateau and its relationship with the Ross Sea [1977, eng] **E-19258**
Kerguelen Plateau bathymetry, sediment distribution and crustal structure [1977, eng] **E-19260**
Geologic history of the Maurice Ewing Bank of the Falkland Plateau [1977, eng] **E-19263**
Sedimentation processes and acoustic stratigraphy in the Bellingshausen Basin [1977, eng] **E-19264**
Micromanganese nodules in deep-sea sediments [1976, eng] **E-19315**
Eltanin cruise 55 core data [1977, eng] **E-19353**
Distribution of ferromanganese deposits in the World Ocean [1972, eng] **E-19375**
Regional geochemistry of ferromanganese nodules in the world ocean [1972, eng] **E-19376**
Pleistocene manganese pavement production in the Tasman Sea [1972, eng] **E-19377**
Islas Orcadas cruise 11, Buenos Aires to Cape Town [1977, eng] **E-19634**
Antarctic Marine Geology Research Facility, 1976-1977 [1977, eng] **E-19645**
Geomorphology of the ocean floor [1976, rus] **E-19740**
Zeolites in South Atlantic deep-sea sediments [1977, eng] **E-19848**
Geochemistry of sediments in the western central Atlantic, DSDP Leg 39 [1977, eng] **E-19849**
Petrology and age of Walvis Seamount and Gough Island volcanic tuffs [1977, eng] **E-19850**
General synthesis of Central and South Atlantic drilling results, Leg 39, Deep Sea Drilling Project [1977, eng] **E-19851**
History of sediment lithofacies in the South Atlantic Ocean [1977, eng] **E-19852**
Early Tertiary geology of the Indian Ocean region [1978, eng] **E-19874**
Indian Ocean sediment distribution since the Late Jurassic [1978, eng] **E-19876**
Paleoenvironmental analysis and correlation of a Cretaceous *Islas Orcadas* core from the Falkland Plateau, Southwest Atlantic [1977, eng] **E-20137**
Use of strontium isotopes to study mixing of sediment derived from different sources: the Ross Sea, Antarctica [1978, eng] **E-20513**
Genesis of island arcs [1977, eng] **E-20602**
Coastal geomorphology of high latitudes [1975, eng] **E-20692**
Ocean floor structure in the southern Atlantic Ocean [1978, rus] **E-20719**
Volcanogenic sediment in the Ross Sea [1977, eng] **E-20753**
Geomorphological map of the Indian Ocean and Pacific Ocean antarctic sectors [1978, rus] **E-20807**
Plate tectonics: hot spot implicated in ridge formation [1978, eng] **E-20851**
Two patterns of modern global lithogenesis and their methodology [1978, eng] **E-20902**
Destruction of the Early Cretaceous marginal basin in the Andes of Tierra del Fuego [1977, eng] **E-21116**
Islas Orcadas cruise 16 [1978, eng] **E-21558**
Basal sediment ages of Islas Orcadas cruise 11 piston-cores [1978, eng] **E-21559**
Basal sediment ages of ARA *Islas Orcadas* cruise 12 piston cores [1978, eng] **E-21560**
Amino acid racemization in *Islas Orcadas* piston core 12-77-24 [1978, eng] **E-21561**
Manganese nodules in the South Georgia Basin and Falkland Plateau [1978, eng] **E-21566**
Ice-rafted sediments in the Arctic and Antarctic [1976, eng] **F-20402**
Oceanography and sedimentology of Drake Passage, Antarctica [1968, eng] **J-19270**
Islas Orcadas cruise 12: Cape Town to Buenos Aires [1977, eng] **J-19633**
Attempt at compiling a schematic map of exogenetic geomorphological factors acting on the World ocean bottom [1977, rus] **J-19742**
Antarctic neotectonics and its mapping [1969, rus] **L-19854**
Seismicity and tectonics of the Ninetyeast Ridge area [1978, eng] **L-20861**
Heat flow on the Pacific-Antarctic Ridge [1978, eng] **L-21019**

Submarine operations
Underwater inspection of icebergs [1978, eng] **F-20465**

Submarine topography
Amphipods and polychaetes of both polar oceans compared [1977, eng] **B-20042**
Fish, crustaceans, and the sea floor under the Ross Ice Shelf [1979, eng] **B-21102**
Circum-Antarctic marine geology [1977, eng] **E-19254**
Opening of Drake Passage [1977, eng] **E-19256**
Kerguelen Plateau bathymetry, sediment distribution and crustal structure [1977, eng] **E-19260**
Geologic history of the Maurice Ewing Bank of the Falkland Plateau [1977, eng] **E-19263**
Sedimentation processes and acoustic stratigraphy in the Bellingshausen Basin [1977, eng] **E-19264**
Islas Orcadas cruise 11, Buenos Aires to Cape Town [1977, eng] **E-19634**
Antarctic plate boundary in Southwest Indian Ocean [1978, eng] **E-19869**
Further evidence for the Early Cretaceous breakup of Gondwanaland off southwestern Australia [1978, eng] **E-19875**
Tectonic framework of Cenozoic volcanism in the Scotia Sea region—a review [1976, eng] **E-20147**
Sediment distribution around the Bouvet triple junction [1978, eng] **E-20358**
Sedimentological clues to palaeo-oceanography [1977, eng] **E-20569**
Coastal geomorphology of high latitudes [1975, eng] **E-20692**
Ocean floor structure in the southern Atlantic Ocean [1978, rus] **E-20719**
Geomorphological map of the Indian Ocean and Pacific Ocean antarctic sectors [1978, rus] **E-20807**
Margin of continuous glaciation of Western Antarctica in the Ross Sea during the last glaciation maximum [1977, rus] **F-20173**
Effect of meridional circulation in large scale current topography interactions [1977, eng] **J-19630**
Combined effects of wind stress and topography in a two-layer model of the Southern Ocean [1978, eng] **J-20162**
Topographic effect on the deep circulation and the abyssal oxygen distribution [1978, eng] **J-20249**
Hydrographic investigations of approaches to the Antarctic station Molodezhnaya [1968, eng] **J-20338**
Model of narrow jets in a zonal ocean [1978, eng] **J-20709**
Outcrops, currents and facies in the east Pacific antarctic zone [1977, fre] **J-20863**
Cenozoic hiatuses in pelagic sediments [1978, eng] **J-21020**
Observations on the southwest Indian/Antarctic Ocean [1977, eng] **J-21024**
Bottom topography effects on ocean currents [1972, eng] **J-21196**
History of sedimentation and abyssal circulation on the Greater Antilles Outer Ridge [1974, eng] **J-21212**
Abyssal traces and megafauna in the Arctic and Antarctic [1978, eng] **J-21452**
Antarctic Circumpolar Current and topography [1978, eng] **J-21548**
Soviet research in the Southern Ocean [1978, rus] **J-21693**
Geophysical studies in Antarctic waters with the *M.S. Explora* [1978, eng] **J-21710**
Oceanic and continental basements at conjugate continental margins [1976, eng] **L-19513**

Submarine topography *(cont.)*

Long-wavelength gravity anomalies and intraplate seismicity [1978, eng] **L-19871**
Bounding the thickness of the oceanic magnetized layer [1977, eng] **L-20013**
Marine seismic measurements in the New Zealand region [1977, eng] **L-20014**
Basement morphology and rift geometry near the former junction of India, Australia, and Antarctica [1978, eng] **L-20062**

Sudden warming

See under: Stratosphere

Supply

See: Food supply; Logistics; Transportation

Surface features

See under: Glacier ice; Ice; Ice sheet; Sea ice; Snow

Surveys

See under: Geomagnetic field. *See also:* Geodetic survey; Seismic exploration; Topographic survey

Survival

Antarctic first aid manual [1978, eng] **H-20780**
Time limit for outdoor activity in Antarctica as a function of wind speed and air temperature [1978, rus] **H-21046**
See also: Search and rescue

Suspended sediments

See: Sea water/Suspensions

Symposia

See: Conferences

Taxonomy

See under: Arthropoda; Arthropoda-Arachnida; Arthropoda-Crustacea; Arthropoda-Insecta; Aves-Sphenisciformes; Bryophyta-Musci; Bryozoa; Coelenterata; Echinodermata; Mammalia; Mammalia-Pinnipedia; Mollusca; Pisces; Porifera; Protozoa; Thallophyta; Thallophyta-Algae; Thallophyta-Fungi; Thallophyta-Lichens; Vermes

Tectonics

Principal findings of glaciological and geomorphological research in the McMurdo Sound region (Victoria Land) [1977, rus] **A-21140**
Spring meeting 1977, abstracts [1977, eng] **A-21360**
Fall meeting 1977, abstracts [1977, eng] **A-21363**
Fall meeting 1978, abstracts [1978, eng] **A-21365**
Circum-Antarctic marine geology [1977, eng] **E-19254**
Early phase of circum-Antarctic ocean basin evolution [1977, eng] **E-19255**
Opening of Drake Passage [1977, eng] **E-19256**
Displacements between Australia, New Zealand, and Antarctica since the Late Cretaceous [1977, eng] **E-19265**
Evolution of the Scotia Arc [1977, eng] **E-19316**
Emplacement of giant ophiolite nappes. I. Mesozoic-Cenozoic examples [1977, eng] **E-19317**
Deformation, serpentinization and emplacement of a dunite complex [1977, eng] **E-19322**
Drift of the major continental blocks since the Devonian [1977, eng] **E-19329**
Geology of Antarctica: a review [1977, eng] **E-19476**
Geological comparison of the Shackleton Range and the Pensacola Mountains [1977, eng] **E-19649**
Marie Byrd Land volcanology [1977, eng] **E-19656**
Geologic map of Antarctica: 1:2,500,000 [1977, fre] **E-19797**
Present tectonics and Late Cenozoic evolution of New Zealand [1978, eng] **E-19810**
Antarctic plate boundary in Southwest Indian Ocean [1978, eng] **E-19869**
Early Tertiary geology of the Indian Ocean region [1978, eng] **E-19874**
Further evidence for the Early Cretaceous breakup of Gondwanaland off southwestern Australia [1978, eng] **E-19875**
Report on the geology of the dry valley region, Transantarctic Mountains [1973, ita] **E-19877**
Sedimentologic approach to lithosphere plate restoration [1978, eng] **E-19989**
Symposium on Andean and Antarctic volcanology problems [1976, eng] **E-20144**
Tectonic framework of Cenozoic volcanism in the Scotia Sea region—a review [1976, eng] **E-20147**
Magellan Fault Zone [1976, eng] **E-20148**
Volcanic history in Marie Byrd Land [1976, eng] **E-20149**
Plate tectonics [1978, eng] **E-20182**
Antarctica and Gondwanaland [1978, eng] **E-20201**
Geology of the Antarctic Peninsula [1978, eng] **E-20236**
Antarctica, a key to the understanding of the evolution of Gondwanaland [1977, eng] **E-20280**
Flood basalts, subduction and the break-up of Gondwanaland [1978, eng] **E-20404**
Early Cenozoic global plate reorganization [1978, eng] **E-20409**
Spreading history of the eastern Indian Ocean [1978, eng] **E-20529**
Estimating plate motion from ridge and trench boundaries [1978, eng] **E-20570**
Geological structure of Mac. Robertson Land (East Antarctica) [1978, rus] **E-20600**
Inter-arc basins: a kinematic model [1978, eng] **E-20622**
Tectonic zonation and geological evolution of Antarctica [1978, rus] **E-20674**
Coastal geomorphology of high latitudes [1975, eng] **E-20692**
Revised reconstruction of the southern continents [1978, eng] **E-20701**
Late Jurassic bivalves from Ellsworth Land [1977, eng] **E-20755**
Fossils and the drifting continents [1976, eng] **E-20846**
Plate tectonics: hot spot implicated in ridge formation [1978, eng] **E-20851**
Two patterns of modern global lithogenesis and their methodology [1978, eng] **E-20902**
Intraplate tectonism [1978, eng] **E-21003**
Geology of the Gerlache Strait, 64-65S [1976, spa] **E-21009**
Present-day plate motions [1978, eng] **E-21051**
Extension behind island arcs and motions relative to hot spots [1978, eng] **E-21053**
Miocene glaciomarine sediments from beneath the southern Ross Ice Shelf, Antarctica [1979, eng] **E-21095**
Destruction of the Early Cretaceous marginal basin in the Andes of Tierra del Fuego [1977, eng] **E-21116**
Evolution of marginal basins and adjacent shelves in east and southeast Asia [1978, eng] **E-21231**
Channel Country fluvial sands and associated facies of central-eastern Australia [1979, eng] **E-21248**
Metamorphic petrology of the Sarmiento ophiolite complex, Chile [1978, eng] **E-21287**
Alternative model for early Tertiary absolute plate motions [1978, eng] **E-21288**
Naleds in the Altais at mid-altitude [1979, eng] **E-21320**
Fossil marginal basin in the southern Andes [1974, eng] **E-21327**
Model for ocean-floor metamorphism, seismic layering and magnetism [1976, eng] **E-21328**
Report on an archaeological expedition in Magallanes (Dec. 14, 1976—Jan. 6, 1977) [1976, spa] **E-21329**
Nature of the oceanic crust [1976, eng] **E-21330**
Orogenic volcanism in Southern Chile [1976, sp] **E-21331**
Marginal basin "rocas verdes" complex from southern Chile [1976, eng] **E-21332**
Mesozoic volcano-tectonic rift zone in southernmost South America [1978, eng] **E-21333**
Pillow talk [1978, eng] **E-21334**
Scotia Arc Tectonics Project, 1977-78 [1978, eng] **E-21503**
Islas Orcadas cruise 16 [1978, eng] **E-21558**
Antarctic metamorphic facies [1978, rus] **E-21700**
Earth science investigations on the sixth continent [1978, ger] **F-20865**
Low sea levels, droughts and mammalian extinctions [1978, eng] **J-19942**
Seismicity of the South Sandwich Islands region [1977, eng] **L-19267**
Oceanic and continental basements at conjugate continental margins [1976, eng] **L-19513**
Northward motion of India since the Late Cretaceous [1978, eng] **L-19802**
Antarctic neotectonics and its mapping [1969, rus] **L-19854**
Microseismicity near the Indian Ocean triple junction [1977, eng] **L-19910**
Bounding the thickness of the oceanic magnetized layer [1977, eng] **L-20013**

Basement morphology and rift geometry near the former junction of India, Australia, and Antarctica [1978, eng] L-20062
Towards a more certain reconstruction of Gondwanaland [1977, eng] L-20278
Tentative paleocontinental maps for the Early Phanerozoic and Proterozoic [1978, eng] L-20688
Seismicity and tectonics of the Ninetyeast Ridge area [1978, eng] L-20861
Heat flow on the Pacific-Antarctic Ridge [1978, eng] L-21019
Rodriguez, Darwin, Amsterdam, ... a second type of hotspot island [1978, eng] L-21052
Seismic wave research [1974, eng] L-21193
Seismic wave research [1974, eng] L-21194
See also: Crustal studies; Mantle studies; Structural geology

Temperature
See under: Atmosphere; Firn; Glacier ice; Ice; Ice sheet; Ocean; Shelf ice; Snow; Upper air

Terns
See: Aves-Charadriiformes

Terrestrial biology
Discussion on scientific research in Antarctica [1977, eng] A-20272
Moss and lichen communities near Showa [1977, jap] B-19298
Plant distribution on W. Ongul and Teöya Islands [1977, jap] B-19299
Classification of terrestrial vegetation near McMurdo Sound, continental Antarctica [1973, eng] B-19396
Wildlife in the Falklands [1972, eng] B-19446
Influence of reindeer on the vegetation of South Georgia [1976, eng] B-19560
Geobotanical regions of the Arctic and Antarctic [1977, rus] B-20007
Ecosystem diversity differences: poles and tropics [1977, eng] B-20038
Terrestrial adaptations in polar regions [1978, eng] B-20207
Terrestrial ecosystems in the Antarctic [1977, eng] B-20273
Place of the Antarctic in biological sciences [1977, eng] B-20276
Ecological investigations of yeasts in antarctic soils [1978, eng] B-20900
Taxonomy of antarctic bacteria from soils and air primarily of the McMurdo Station and Victoria Land dry valleys region [1978, eng] B-20901
Life found inside antarctic rocks [1978, eng] B-21223
Exploring Macquarie Island. Part 1. Southern wildlife outpost [1978, eng] B-21373
Illustrated introduction to antarctic wildlife [1976, ita] B-21382

Terrestrial physics
Discussion on scientific research in Antarctica [1977, eng] A-20272
SCAR Working Groups on Geology and Solid Earth Geophysics [1978, eng] E-20797
SCAR Working Group on Solid Earth Geophysics [1978, eng] L-20795

INSTRUMENTS
Proceedings of the 7th International Symposium on Earth Tides [1976, eng] L-20682
First observations of gravity tides in the central part of Antarctica [1976, ger] L-20683
Air temperature and pressure in relation to gravity in Central Antarctica [1976, eng] L-20684
Gravimetric earth-tide measurements at Kerguelen Islands [1976, eng] L-20685
Measuring gravity relationship between Mirnyy and Vostok (Antarctica) [1976, ger] L-20686

MAPS AND CHARTS
Environmental inventories: Antarctic area [1978, eng] I-20425
Tentative paleocontinental maps for the Early Phanerozoic and Proterozoic [1978, eng] L-20688

MODELS
Towards a more certain reconstruction of Gondwanaland [1977, eng] L-20278

Territorial claims and boundaries
Antarctica. An information paper presented by Senator the Honourable J.J. Webster, Minister for Science [1977, eng] A-19269
Antarctic riches—for whom [1977, eng] A-19438
Attention on Antarctica [1977, eng] A-19439
Mining in Antarctica [1976, eng] A-19737
Conservation in the Antarctic [1977, eng] B-20275
International law problems of acquisition and transportation of antarctic icebergs [1978, eng] F-20480
Some international implications of iceberg transfer [1978, eng] F-20481
Legal/political aspects of antarctic iceberg utilization [1978, eng] F-20482
Aspects of transporting icebergs from Antarctica to the United States [1978, eng] F-20483
Status of Antarctica in the light of international law [1977, eng] M-19381
[Press briefing] [1977, eng] M-19581
Law of nations in polar regions [1974, ita] M-20004
Political and legal analysis: the Antarctic Treaty [1978, eng] M-20151
Chronicles of the South Atlantic: Patagonia, Falkland Islands and Antarctica [1974, spa] M-20174
Legal status of the Antarctic [1976, eng] M-20189
Antarctica, the Southern Ocean, and the law of the sea [1977, eng] M-21065
Antarctica: conflict or compromise [1978, eng] M-21075
Argentine plans to invade Falklands foiled [1975, eng] M-21273
Chilean diplomatic activities in Antarctica [1977, spa] M-21296
Future of the Falkland Islands [1968, eng] M-21366
British-Argentine negotiations over the Falklands [1968, eng] M-21367
British relations with her Falkland subjects [1968, eng] M-21368
Trends and prospects for regimes for living and mineral resources in the Antarctic [1979, eng] M-21369
Regional geography of Antarctica and the Southern Ocean [1978, eng] M-21469
Recommended approach to the antarctic resource problem [1978, eng] M-21473
Antarctic system and the utilization of resources [1978, eng] M-21474
Sunshine on Proclamation [1978, eng] M-21653
See also: National interests

Thallophyta
Photosynthesis in mosses and lichens [1975, eng] B-20399
Occurrence and metabolic activity of organisms under the Ross Ice Shelf, Antarctica, at Station J9 [1979, eng] B-21103
Biogeography and metabolism of Ross Sea plankton [1978, eng] B-21580
Influence of diatoms on the structure and strength of sea ice [1968, eng] F-20332

ECOLOGY
Plant communities near Showa related to water supply and soil [1977, jap] B-19297
Classification of cryptogamic communities in the maritime Antarctic [1976, eng] B-19547
Microorganisms in antarctic desert rocks from dry valleys and Dufek Massif [1977, eng] B-19612

GEOGRAPHIC DISTRIBUTION
Plant communities near Showa related to water supply and soil [1977, jap] B-19297
Geobotanical regions of the Arctic and Antarctic [1977, rus] B-20007

PHYSIOLOGY
Effect of temperature on growth of obligately psychrophilic bacteria [1977, eng] B-19416
Some physiological changes of an obligate psychrophile at supermaximum growth temperatures [1977, eng] B-19417

TAXONOMY
Classification of cryptogamic communities in the maritime Antarctic [1976, eng] B-19547

Thallophyta-Algae
Phytoplankton studies in the water column and in the pack ice of the Weddell Sea [1977, eng] B-19616

Thallophyta-Algae *(cont.)*
Cocconeis diatom on the skin of Franciscana [1977, eng] **B-20094**
Saline lake algae in Antarctica [1978, jap] **B-20436**
Primary productivity in sea ice of the Weddell region [1978, eng] **B-20937**
Biology of an antarctic aquatic moss community [1978, eng] **B-21289**
Primary productivity of a hypersaline antarctic lake [1978, eng] **B-21350**
Dispersal of algae and Protozoa by antarctic flying birds [1978, eng] **B-21590**
Ecosystem comparisons of oasis lakes and soils [1978, eng] **B-21605**
Thalassiosira torokina n.sp. (diatom) and its significance in Late Cenozoic biostratigraphy [1977, eng] **E-19671**
Extraction of diatoms from glacial sediments [1977, eng] **E-19672**
Last-abundant-appearance of a diatom in the Subantarctic [1978, eng] **E-19988**
Selective dissolution of Recent coccoliths in the Atlantic Ocean [1977, eng] **E-20568**
Fresh-water diatoms from perched deltas in Taylor Valley, Antarctica [1978, eng] **E-21517**
Glacier history of the McMurdo Sound region [1977, eng] **F-19676**
Sea ice and ice algae relationships in the Weddell Sea [1978, eng] **F-21544**

ECOLOGY
Effects of ice facies on small scale oceanic phenomena [1977, eng] **B-19609**
History and recent advances in the study of ice biota [1977, eng] **B-20035**
Organic life in sea ice [1977, eng] **B-20036**
Seasonal changes in sea ice algae near Showa Station [1977, eng] **B-20037**
Ecology of marine planktonic diatoms [1977, eng] **B-21055**
Diatom flora and environmental factors in some freshwater ponds of East Ongul Island [1977, jap] **E-19296**
Late Neogene diatom biostratigraphy and paleoecology of the dry valleys and McMurdo Sound, Antarctica [1977, eng] **E-19998**

GEOGRAPHIC DISTRIBUTION
Plankton diatoms in the South Pacific Ocean [1968, eng] **B-19251**
Limnology of fresh water lakes at Anvers Island, Antarctica [1971, eng] **B-19490**
Distribution of indicator species of planktonic algae in the world ocean [1978, eng] **B-20606**
Distribution of displaced antarctic diatoms in the Argentine Basin [1978, eng] **B-20843**
Displaced antarctic diatoms in the southwestern and central Pacific [1976, eng] **B-21060**
Diatom flora and environmental factors in some freshwater ponds of East Ongul Island [1977, jap] **E-19296**

MORPHOLOGY
Structure of *Denticula antarctica* McCollum [1978, eng] **E-21569**

NUTRITION
Limnology of fresh water lakes at Anvers Island, Antarctica [1971, eng] **B-19490**

PHYSIOLOGY
Photosynthesis of algae in ice [1978, eng] **B-21279**

TAXONOMY
Transfer of New Zealand *Tylotus proliferus* to the genus *Gracilaria* [1977, eng] **B-19807**
Freshwater algae from Crozet and Kerguelen Islands (excluding diatoms). 2. Examination of specimens taken in 1973 and 1974 [1977, fre] **B-20930**
Diatom flora and environmental factors in some freshwater ponds of East Ongul Island [1977, jap] **E-19296**

Thallophyta-Fungi
Identification of some fungi from soil and air of Antarctica [1978, eng] **B-21352**

TAXONOMY
Microsporum magellanicum and *Cunninghamella antarctica* [1977, eng] **B-19312**

Thallophyta-Lichens
Lichens of Navarino Island. Pt. 1. Preliminary systematic and ecological study [1977, spa] **B-20913**
Lichen-invertebrate associations [1977, eng] **B-21176**

ECOLOGY
Moss and lichen communities near Showa [1977, jap] **B-19298**
Plant distribution on W. Ongul and Teöya Islands [1977, jap] **B-19299**
Lichens of Marion and Prince Edward Islands, southern Indian Ocean [1976, eng] **B-20097**
Lichens of cold deserts [1977, eng] **B-21177**
Role of lichens in antarctic ecosystems [1978, eng] **B-21228**

GEOGRAPHIC DISTRIBUTION
Lichens of cold deserts [1977, eng] **B-21177**

MORPHOLOGY
Abnormal growth form of *Usnea antarctica* Du Rietz [1976, eng] **B-19564**

TAXONOMY
Foliose and fruticose lichens from Tristan da Cunha [1977, eng] **B-19455**
South Georgian microlichens: 2. A new species of *Microglaena* Körb. [1976, eng] **B-19566**
Two new lichens from Marion Island, southern Indian Ocean [1976, eng] **B-20096**
Lichens of Marion and Prince Edward Islands, southern Indian Ocean [1976, eng] **B-20097**

Thawing
See under: Glacier ice; Ice; Ice sheet; Icebergs; Pack ice; Sea ice; Shelf ice; Snow

Thickness
See under: Glacier ice; Ice; Ice sheet; Icebergs; Pack ice; Sea ice; Shelf ice

Tides
Littoral ecology of Marion and Prince Edward Islands (Southern Ocean) [1976, eng] **B-20835**
Dissipation of tidal energy by antarctic ice shelves [1978, eng] **F-20704**
On the role of cosmogeophysical forces in polar hydrometeorological processes [1977, eng] **I-19787**
Oceanographic data of the 17th JARE 1975-1976 [1977, eng] **J-19528**
Provisional cotidal charts for the southern Ross Sea [1977, eng] **J-19623**
Tidal currents in the central Weddell Sea [1977, eng] **J-19809**
Tidal force variations at high latitudes [1977, rus] **J-20081**
Tidal observations in the region of Molodezhnaya Station [1968, eng] **J-20335**
Hydrographic investigations of approaches to the Antarctic station Molodezhnaya [1968, eng] **J-20338**
Characteristics of tidal phenomena in bays in the Schirmacher Ponds [1978, rus] **J-20721**
Ocean tide and waves beneath the Ross Ice Shelf, Antarctica [1979, eng] **J-21099**
Oceanographic studies in relation to krill fisheries [1978, ger] **J-21445**
Physical oceanography of the Ross Sea [1978, eng] **J-21553**
Spatial variation of Ross Sea tidal constituents [1978, eng] **J-21556**
Gravimetric earth tide station Kerguelen (Indian Ocean)—Results of the first measurement period January-May 1973 [1973, ger] **L-20687**
Geomagnetic L-variation at SANAE, Antarctica [1978, eng] **L-21342**

Topographic survey
New Zealand topographic survey in Ross Dependency [1963, eng] **C-19279**
Survey of a traverse on the Antarctic inland ice [1975, ger] **C-19501**
Photogrammetric studies of a group from the G.D.R. during the 17th Soviet Antarctic Expedition [1975, ger] **C-19503**
Antarctic cartography [1977, eng] **C-19675**
Geodetic work in Alasheyev Bight [1968, eng] **C-20341**

Some problems of photogrammetry in Antarctica [1976, eng] C-21393
Geodetic and meteorological investigations of ground refraction over antarctic continental ice [1978, rus] C-21463
Geophysical studies of the Dufek intrusion, Pensacola Mountains, Antarctica, 1976-1977 [1977, eng] L-19651

Topographic surveys
See also: Subglacial topography; Submarine topography

Tourism
Race is on for Antarctica [1974, eng] A-20578
Man's impact on antarctic birds [1978, eng] B-19987
Problems of exploitation and conservation of the ocean [1977, rus] J-20517
Eighth Antarctic Treaty Consultative Meeting [1975, spa] M-20250

Transportation
Iceberg utilization [1978, eng] F-20448
Icebergs - a natural resource [1978, eng] F-20451
Some elements of iceberg technology [1978, eng] F-20454
Ice moving in sea water [1978, eng] F-20461
Small scale modeling of iceberg transport [1978, eng] F-20464
Feasibility of using paddle-wheels for the propulsion of icebergs [1978, eng] F-20466
High efficiency iceberg propulsion systems [1978, eng] F-20468
Osmotic propulsion of icebergs [1978, eng] F-20469
Self propelled iceberg [1978, eng] F-20470
Iceberg protection by foamed insulation [1978, eng] F-20472
Yields and energetics in moving unprotected icebergs to southern continents [1978, eng] F-20476
Pilot program for exporting antarctic icebergs [1978, eng] F-20477
Delivery of icebergs to Saudi Arabia—an assessment [1978, eng] F-20479
International law problems of acquisition and transportation of antarctic icebergs [1978, eng] F-20480
Some international implications of iceberg transfer [1978, eng] F-20481
Aspects of transporting icebergs from Antarctica to the United States [1978, eng] F-20483
Cloud seeding and potential weather impacts [1978, eng] F-20484
Ecological aspects of iceberg transport from antarctic waters [1978, eng] F-20485
Weather modification and environmental and ecological impact (caused by towed icebergs) [1978, eng] F-20489
Disposal of radioactive wastes in the antarctic ice sheet: an environmental impact assessment [1978, eng] G-19984
Report of Operation *Deep Freeze* 78, 1977-1978 [1978, eng] G-20416
Antarctic field manual [1978, eng] G-20779
Operation *Deep Freeze:* Operation order No.1-79 [1978, eng] G-20783
Water supply and weather modifications through the use of transported icebergs from the Antarctic [1977, eng] G-20904
Polar transportation requirements study report, Vol.3 [1968, eng] G-21208
See also: Vehicles

AIR
Air operations, *Deep Freeze* '77 [1977, eng] G-19731
South Pole approach [1978, eng] G-20061
Polar logistic support: the United States Navy [1978, eng] G-20208
Report of Antarctic Development Squadron Six operations [1978, eng] G-20415
Features of aviation meteorology in Antarctica [1978, rus] I-20742
See also: Navigation/Air

OVERSNOW
First landing at Ongul Island [1978, jap] A-20433
East Antarctic pack ice [1977, rus] F-19841
Visibility in blowing snow and applications in traffic operations [1978, eng] F-21715

SEA
Ice conditions encountered by the d/e *Ob'* (1972/73) [1978, rus] F-20736
Ice conditions encountered by the research vessel *Professor Zubov* (Dec. 1972-Mar. 1973) [1978, rus] F-20737
Features of the formation of the Balleny ice massif and drift of the *Ob'* [1978, rus] F-20738
Iceberg melting during transport from Antarctica to Arabia [1978, rus] F-21390
Controlled perimeter blasting in cold regions [1975, eng] G-19487
Ship operations, *Deep Freeze* '77 [1977, eng] G-19734
Polar logistic support: the United States Navy [1978, eng] G-20208
Results of navigability trials of antarctic ice by the *Ob'* [1978, rus] G-20739
Polar transportation requirements study report, Vol.2 [1968, eng] G-21209
Polar transportation requirements study report. Volume 1 [1968, eng] G-21211
Ship operations, *Deep Freeze* 78 [1978, eng] G-21645
See also: Navigation/Sea

Traverse operations
The army goes to the South Pole [1975, spa] D-20259
Glaciological survey in 1976-1977 [1978, eng] F-20077
Glaciological investigations along the Mirny-Pionerskaya-Dome C profile [1978, rus] F-21389
Reopening of Showa Station [1978, jap] G-19769
Antarctic physiology [1978, jap] H-20435
See also: Expeditions; Logistics

Treaties
See: Antarctic Treaty; International cooperation

Tropopause
Results of a vertical atmospheric profile on the Bellingshausen-Molodezhnaya route (Nov. 1973) [1978, rus] I-20741
Tropospheric jet streams in Antarctica [1978, rus] I-21456

Troposphere
Atmospheric processes in the southern hemisphere [1977, rus] I-19883
Antarctic atmosphere as seen by satellites [1977, eng] I-20283
Southern hemisphere tropospheric circulation and India's summer monsoon [1978, eng] I-20387
Atmospheric distribution of nitrous oxide [1977, eng] I-20498
Atmospheric HT and HTO, Part 4 [1977, eng] I-20499
Relationship between the antarctic oceanic polar front and free-atmosphere processes [1978, rus] I-20646
Zonal mean characteristics of wind speed in the southern hemisphere [1978, rus] I-20647
Results of a vertical atmospheric profile on the Bellingshausen-Molodezhnaya route (Nov. 1973) [1978, rus] I-20741
Katabatic wind in the Molodezhnaya Station area and forecasting it [1978, rus] I-20764
Using macrocirculation to produce experimental three-day weather and pressure field forecasts for Antarctica [1978, rus] I-21455
Tropospheric jet streams in Antarctica [1978, rus] I-21456
Global and regional N20 measurements [1978, eng] I-21481

Upper air
Climate of the upper air: Southern Hemisphere. Vol.3. Vector mean geostrophic winds: isogon and isotach analyses [1971, eng] I-20140
Aerological stations in southern high latitudes [1977, rus] I-21268
See also: Stratosphere; Tropopause

WIND
Zonal mean characteristics of wind speed in the southern hemisphere [1978, rus] I-20647

Vehicles
Reopening of Showa Station [1978, jap] G-19769
Cargo/passenger van for polar areas [1973, eng] G-20813
Passenger/light cargo vehicle for polar areas [1973, eng] G-20814
Snow transport equipment model 1000 towed snowplow carrier [1974, eng] G-20817
See also: Aircraft; Ships

Vermes
Trematoda: Notocotylidae from the Sheathbill [1969, eng] B-19339
Trematode parasites of the Sheathbill [1968, eng] B-19340
Nematode and acanthocephalan parasites of the Sheathbill [1969, eng] B-19342

Vermes *(cont.)*
Amphipods and polychaetes of both polar oceans compared [1977, eng] **B-20042**
Antarctic freshwater rotifers [1977, eng] **B-20785**

ECOLOGY
Temperature of the biotic medium and its effect on Antarctic Cercaria [1971, ger] **B-19379**
Bryozoan epizoa of *Laetmonice producta* Grube (Annelida, Polychaeta) [1972, spa] **B-19792**
Taxonomy and ecology of a new monocelid flatworm from Macquarie Island (Platyhelminthes, Turbellaria) [1977, eng] **B-21347**

GEOGRAPHIC DISTRIBUTION
Oligochaeta from subantarctic islands [1968, eng] **B-19957**

MORPHOLOGY
Cestodes from fish, birds and whales [1969, eng] **B-19958**
Campbellenchinae (Nematoda: Tylodoridae), a new subfamily from Campbell Island, with a description of two new species [1977, eng] **B-20163**

TAXONOMY
New species of "tentacled" marine fish leech parasitic on *Notothenia* from the subantarctic Marion and Crozet Islands [1972, eng] **B-19310**
Oligochaeta from subantarctic islands [1968, eng] **B-19957**
Campbellenchinae (Nematoda: Tylodoridae), a new subfamily from Campbell Island, with a description of two new species [1977, eng] **B-20163**
Marine nematodes from McMurdo Sound [1978, eng] **B-20854**
Redescription of marine nematodes [1978, eng] **B-20855**
Taxonomy and ecology of a new monocelid flatworm from Macquarie Island (Platyhelminthes, Turbellaria) [1977, eng] **B-21347**
New species of trematode parasites in fish of the Falkland-Patagonian region, southwest Atlantic Ocean [1977, rus] **B-21375**

Visibility
Visibility in blowing snow and applications in traffic operations [1978, eng] **F-21715**
Features of aviation meteorology in Antarctica [1978, rus] **I-20742**
Tropospheric jet streams in Antarctica [1978, rus] **I-21456**

VLF emissions
Experiment communication and data transmission through the ATS-3 synchronous satellite [1977, eng] **K-19710**
Siple/Roberval VLF transmitting experiments [1977, eng] **K-19711**
Upper atmosphere research in Antarctica [1978, eng] **K-20291**
Controlled wave-particle interaction experiments [1978, eng] **K-20295**
Early history of upper atmospheric physics research in Antarctica [1978, eng] **K-20299**
Mission to the Japanese antarctic station, Showa [1976, fre] **K-20350**
Magnetospheric radiation from power lines [1975, eng] **K-20507**
Power line radiation in the magnetosphere [1977, eng] **K-20510**
Interaction between particles and VLF waves [1978, eng] **K-20535**
VLF signal observations at Molodezhnaya Station [1978, rus] **K-20773**
Proceedings of the Second Symposium on Rocket Experiments in Antarctica [1978, eng] **K-20947**
Observing plan of wave normal direction of auroral VLF emissions [1978, eng] **K-20955**
Magnetospheric effects of power line radiation [1978, eng] **K-21001**
Stanford University VLF wave injection experiment on the ISEE-A spacecraft [1978, eng] **K-21234**
Stimulation of Pc1 micropulsations by controlled VLF transmissions [1977, eng] **K-21477**
High time resolution riometer studies of magnetospheric electron precipitation [1978, eng] **K-21623**
Precipitating electrons observed from balloons [1978, eng] **K-21624**
Siple/Roberval magnetospheric wave-wave interaction experiments [1978, eng] **K-21626**
ISEE-1 satellite observations of signals from the Siple transmitter [1978, eng] **K-21627**
Wave-induced particle precipitation effects at Siple Station [1978, eng] **K-21628**
Power line radiation in the magnetosphere [1978, eng] **K-21629**
Jupiter: a new tool for magnetospheric research [1978, eng] **K-21630**
Soviet-American geophysical research at Vostok Station [1978, rus] **L-21460**

DAWN CHORUS
Electron precipitation associated with very low frequency chorus and thunderstorm electric fields [1977, eng] **K-19712**
Rocket observation of VLF emission spectra [1978, eng] **K-20953**
Magnetic activity and subauroral ELF-VLF chorus [1975, eng] **K-21164**

HISS
Very low frequency radio waves in the magnetosphere [1978, eng] **K-20294**
Rocket observations of wave phenomena in the ionosphere [1978, eng] **K-20954**

WHISTLERS
Doppler shifts on whistler mode signals received at Siple Station, Antarctica [1977, eng] **K-19422**
Aurorae and closed magnetic field lines [1977, eng] **K-19804**
Whistler precursors: a possible catalytic role of power line radiation [1977, eng] **K-19911**
Formation of whistler ducts [1978, eng] **K-20100**
Outlying plasmasphere structure detected by whistlers [1976, eng] **K-20215**
Active very low frequency experiments on the magnetosphere from Siple Station, Antarctica [1977, eng] **K-20281**
Very low frequency electromagnetic phenomena: whistlers and micropulsations [1977, eng] **K-20282**
Very low frequency radio waves in the magnetosphere [1978, eng] **K-20294**
Dynamo origin of electric fields in the plasmasphere [1978, eng] **K-20501**
Direction finder for whistler mode signals [1978, eng] **K-20502**
Whistlers and VLF noises propagating just outside the plasmapause [1978, eng] **K-20503**
Electron density in the plasmasphere [1978, eng] **K-20534**
Methods of whistler analysis. Pt.2. Application to whistlers observed on the ground [1977, fre] **K-20840**
Micropulsations observed by whistler-mode transmissions [1978, eng] **K-20979**
Turbulence effects in the cyclotron resonance of monochromatic whistlers [1978, eng] **K-20996**
Whistler observations of substorm electric fields in the nightside plasmasphere [1978, eng] **K-21059**
Stratospheric electric fields [1979, eng] **K-21133**
Whistler-mode propagation studies using Navy VLF transmitters [1967, eng] **K-21192**

Volcanology
Spring meeting 1977, abstracts [1977, eng] **A-21360**
Fall meeting 1977, abstracts [1977, eng] **A-21363**
Fall meeting 1978, abstracts [1978, eng] **A-21365**
Volcanic and seismic activity at Mount Erebus, Antarctica [1976, jap] **E-19278**
Regional volcanology [1975, rus] **E-19420**
Volcanoes and volcanic rock in Antarctica [1977, jap] **E-19586**
Metamorphic basement rocks, central Transantarctic Mountains [1977, eng] **E-19652**
Marie Byrd Land volcanology [1977, eng] **E-19656**
Volcanic rocks of the Chatham Islands [1977, eng] **E-19805**
Petrology and age of Walvis Seamount and Gough Island volcanic tuffs [1977, eng] **E-19850**
Stratigraphic relations between Argentina and Antarctica [1975, spa] **E-19860**
Symposium on Andean and Antarctic volcanology problems [1976, eng] **E-20144**
Upper Cenozoic volcanism in the Andes of southern Chile [1976, eng] **E-20145**
Geology and geochemistry of Bouvet Island [1976, eng] **E-20146**
Tectonic framework of Cenozoic volcanism in the Scotia Sea region—a review [1976, eng] **E-20147**
Magellan Fault Zone [1976, eng] **E-20148**
Volcanic history in Marie Byrd Land [1976, eng] **E-20149**
Cenozoic volcanism in the Antarctic [1977, eng] **E-20277**
Antarctica, a key to the understanding of the evolution of Gondwanaland [1977, eng] **E-20280**
Mount Erebus [1978, eng] **E-20311**

Geology and volcanic history of Hut Point Peninsula [1978, eng] E-20368
Flood basalts, subduction and the break-up of Gondwanaland [1978, eng] E-20404
Volcanogenic sediment in the Ross Sea [1977, eng] E-20753
Mineralogy of ejecta from Mt. Erebus [1977, eng] E-20758
Reconnaissance study of the McMurdo volcanics northwest of the Koettlitz Glacier [1978, eng] E-20872
Buchites in basalts in the Payún Matrú volcano and the Matienzo Base in the Argentine Antarctic [1966, spa] E-20944
Paulet Island and recent volcanism in the islands of the northwest Weddell Sea [1973, spa] E-21086
Age of Mount Andrus and Sr 87/Sr 86 ratio of volcanic rocks in Marie Byrd Land and the South Shetlands [1973, spa] E-21087
Late Cenozoic oxygen and carbon isotopic history and volcanic ash stratigraphy [1979, eng] E-21180
Compositions of three tephra layers from the Byrd Station ice core, Antarctica [1978, eng] E-21239
Orogenic volcanism in Southern Chile [1976, sp] E-21331
Mesozoic volcano-tectonic rift zone in southernmost South America [1978, eng] E-21333
Pillow talk [1978, eng] E-21334
Volcanoes in the Hobbs Coast and Ruppert Coast sectors of Marie Byrd Land [1978, eng] E-21521
Volcanic activity at Mt. Erebus, 1977/78 [1978, eng] E-21522
Volcanic geology of the lower slopes of Mt. Morning [1978, eng] E-21523
Sulfate in antarctic snow [1978, eng] F-20505
Trace metals in antarctic snows since 1914 [1979, eng] F-21255
Symposium on the History of Antarctic Glaciation [1978, rus] F-21392
Augustine volcano [1978, eng] I-21050
Antarctic neotectonics and its mapping [1969, rus] L-19854

Volume
See under: Ice sheet; Icebergs; Shelf ice

Waste disposal
Environmental impact in Antarctica [1978, eng] B-19978
Man's impact along the Antarctic Peninsula [1978, eng] B-19986
High-level and long-lived radioactive waste disposal [1977, eng] G-19327
Nuclear energy risks and nuclear waste disposal in ice [1976, ger] G-19355
Waste disposal at Scott Station [1977, eng] G-19359
Dismantling McMurdo's reactor [1977, eng] G-19489
Burial of high level radioactive wastes [1977, eng] G-19674
Disposal of radioactive waste in ice sheets [1977, eng] G-19759
Disposal of radioactive wastes in the antarctic ice sheet: an environmental impact assessment [1978, eng] G-19984
Examination of radioactivity in the crushed rock from the PM-3A nuclear reactor site, McMurdo, Antarctica [1976, eng] G-20496
Human life support in Antarctica [1978, rus] G-20677
Nuclear power reactor at McMurdo [1978, eng] G-20945
Waste disposal at small Antarctic installations [1977, spa] G-21295
Bacteriological study of pollution [1977, jap] H-19303

Water
See: Meltwater; Sea water

Water level
See: Sea level

Water masses
See under: Ocean

Water supply
Obtaining fresh water from icebergs [1977, rus] F-20158
Is there an iceberg in your future [1977, eng] F-20300
Icebergs for use as freshwater [1978, eng] F-20403
Iceberg utilization [1978, eng] F-20448
Challenges of iceberg utilization [1978, eng] F-20449
Problems associated with iceberg utilization [1978, eng] F-20450
Icebergs - a natural resource [1978, eng] F-20451
Global role of antarctic iceberg exploitation [1978, eng] F-20452
Critical look at the iceberg utilization project [1978, eng] F-20453
Some elements of iceberg technology [1978, eng] F-20454
Potential application of remote sensing in locating and tracking of antarctic icebergs [1978, eng] F-20458
Iceberg cleaving and fracture mechanics [1978, eng] F-20460
Ice moving in sea water [1978, eng] F-20461
Osmotic propulsion of icebergs [1978, eng] F-20469
Use of floating solar collectors in processing iceberg water [1978, eng] F-20473
Making decisions on iceberg utilization [1978, eng] F-20475
Yields and energetics in moving unprotected icebergs to southern continents [1978, eng] F-20476
Pilot program for exporting antarctic icebergs [1978, eng] F-20477
Role of iceberg utilization in solving the Saudi Arabian water problems [1978, eng] F-20478
Delivery of icebergs to Saudi Arabia—an assessment [1978, eng] F-20479
International law problems of acquisition and transportation of antarctic icebergs [1978, eng] F-20480
Some international implications of iceberg transfer [1978, eng] F-20481
Legal/political aspects of antarctic iceberg utilization [1978, eng] F-20482
Aspects of transporting icebergs from Antarctica to the United States [1978, eng] F-20483
Cloud seeding and potential weather impacts [1978, eng] F-20484
Ecological aspects of iceberg transport from antarctic waters [1978, eng] F-20485
Energy and fresh water production from icebergs [1978, eng] F-20486
Energy conservation, water quality, and legal aspects of iceberg utilization [1978, eng] F-20490
Australia may benefit as iceberg idea is refloated [1978, eng] F-20711
Icebergs to Arabia [1978, eng] F-20713
On melting icebergs [1978, eng] F-20907
Numerical modelling of iceberg towing for water supplies—a case study [1978, eng] F-21337
Iceberg melting during transport from Antarctica to Arabia [1978, rus] F-21390
Human life support in Antarctica [1978, rus] G-20677
Water supply and weather modifications through the use of transported icebergs from the Antarctic [1977, eng] G-20904
Nuclear power reactor at McMurdo [1978, eng] G-20945

Water temperature
See: Ocean/Temperature

Waterfowl
See: Aves-Anseriformes

Waves
Climatic zonality of types of seacoasts [1977, rus] E-19286
Thermal structure of antarctic continental slope waters around Molodezhnaya Station [1978, rus] J-20649
Fine structure in the Antarctic Polar Front Zone [1978, eng] J-20708
Characteristics of tidal phenomena in bays in the Schirmacher Ponds [1978, rus] J-20721
Ocean tide and waves beneath the Ross Ice Shelf, Antarctica [1979, eng] J-21099
Ocean wave measurements at the RISP J-9 camp [1978, eng] J-21557
See also: Hydromagnetic waves

Weather forecasting
U.S. Navy global ice analysis and forecasting [1978, eng] F-20459
Cloud seeding and potential weather impacts [1978, eng] F-20484
Weather modification and environmental and ecological impact (caused by towed icebergs) [1978, eng] F-20489
Operational meteorology, *Deep Freeze* '77 [1977, eng] I-19735
Problems of antarctic meteorology [1978, rus] I-20678
Katabatic wind in the Molodezhnaya Station area and forecasting it [1978, rus] I-20764
Polar Sub-programme [1978, eng] I-20823
Implications of outer space technology in meteorology [1975, eng] I-20859
Effects of human activities on global climate; a summary, with consideration of the implications of a possibly warmer earth [1977, eng] I-20957
Using macrocirculation to produce experimental three-day weather and pressure field forecasts for Antarctica [1978, rus] I-21455
Tropospheric jet streams in Antarctica [1978, rus] I-21456

Weather forecasting *(cont.)*
U.S. contribution to the Polar Experiment (POLEX). Part 1. POLEX-GARP (North). Part 2. POLEX-GARP (South) [1974, eng] **I-21467**
Early winter storms in the northwestern Weddell Sea [1978, eng] **I-21610**
Operational meteorology, *Deep Freeze* 78 [1978, eng] **I-21614**

Weather modification
See: Cloud seeding

Weather observations
News from the islands, Antarctica and SANAE [1977, eng] **A-19485**
Survey of a traverse on the Antarctic inland ice [1975, ger] **C-19501**
Studies of barometric leveling in Antarctica [1975, ger] **C-19505**
Some problems of photogrammetry in Antarctica [1976, eng] **C-21393**
Glaciological research program on Mizuho Plateau, 1969-1975 [1978, eng] **F-19820**
Glaciological survey in 1976-1977 [1978, eng] **F-20077**
Conditions for ship unloading near Novolazarevskaya Station [1977, rus] **G-19887**
Polar logistic support: the United States Navy [1978, eng] **G-20208**
Report of Antarctic Treaty meeting on telecommunications [1978, eng] **G-20620**
Time limit for outdoor activity in Antarctica as a function of wind speed and air temperature [1978, rus] **H-21046**
Brief geographical and medical description of Leningradskaya Station [1978, rus] **H-21047**
Automatic Weather Station in Antarctica [1977, eng] **I-19362**
Study of the climate of the Kerguelen Islands and subantarctic region of the Indian Ocean. Climatology of Port-aux-Français [1977, fre] **I-19464**
Annual summary tables of surface meteorological observations at British Antarctic Survey stations [1976, eng] **I-19556**
Climatic charts for BAS stations, 1971 [1976, eng] **I-19557**
Climatic charts for BAS stations, 1972 [1976, eng] **I-19558**
Basic features of Antarctic climate and weather [1977, rus] **I-19567**
Meteorological research in the Arctic and Antarctic during the Soviet regime [1977, rus] **I-19587**
Temperature regime of the South Pole [1977, eng] **I-19694**
Geophysical monitoring for climatic change at the South Pole [1977, eng] **I-19695**
Meteorological research aboard instrumented LC-130R airplane and at the South Pole [1977, eng] **I-19704**
A cold, low-level jet stream in the Bransfield Strait [1977, eng] **I-19705**
Air-sea interaction studies using an X-band radar at Palmer Station [1977, eng] **I-19707**
Operational meteorology, *Deep Freeze* '77 [1977, eng] **I-19735**
Soviet antarctic data on temperature, humidity, and wind speed [1977, rus] **I-19842**
Surface temperature and sea-level pressure at Norway Station and Sanae [1976, eng] **I-19901**
Antarctic meteorological data, 1975 [1975, eng] **I-19943**
Antarctic meteorological data, 1976 [1976, eng] **I-19944**
Antarctic meteorological data. Special volume [1978, eng] **I-19945**
Climatology of solid precipitation [1976, ger] **I-20074**
Around the world, pole to pole, in 48 hours [1977, eng] **I-20150**
Effectiveness of collecting meteorological data in Antarctica by means of simultaneous or consecutive querying of stations by shortwave [1977, rus] **I-20169**
Results of meteorological observations [1968, eng] **I-20342**
Climate data for Norway Station and SANAE in the Antarctic for the years 1960 to 1965 [1965, eng] **I-20424**
Synoptic patterns and weather at McMurdo [1977, eng] **I-20492**
Problems of antarctic meteorology [1978, rus] **I-20678**
Features of aviation meteorology in Antarctica [1978, rus] **I-20742**
Seasonal and frontal variation in antarctic aerosol concentrations [1978, eng] **I-20781**
Polar Sub-programme [1978, eng] **I-20823**
Implications of outer space technology in meteorology [1975, eng] **I-20859**
Meteorological data at Mizuho Station, Antarctica in 1977-1978 [1978, eng] **I-20999**
Meteorological data gathered by ARDS [1978, eng] **I-21006**
Antarctic influence on Brazil's environment [1977, eng] **I-21062**
Climatological data for antarctic stations, No.10, January 1967-December 1968 [1970, eng] **I-21121**
Geophysical monitoring for climatic change, No.6. Summary report 1977 [1978, eng] **I-21405**
Early winter storms in the northwestern Weddell Sea [1978, eng] **I-21610**
Possible mechanism of meridional atmospheric circulation over Antarctica [1978, eng] **I-21613**
Operational meteorology, *Deep Freeze* 78 [1978, eng] **I-21614**
Geophysical monitoring for climatic change at the South Pole, 1977 [1978, eng] **I-21618**
Review of the NOAA (NWS) meteorological program in the Antarctic [1976, eng] **I-21661**
Surface energy balance measurements at the South Pole [1976, eng] **I-21662**

Weather stations
International Antarctic Meteorological Research Centre [1967, eng] **A-20240**
Study of the climate of the Kerguelen Islands and subantarctic region of the Indian Ocean. Climatology of Port-aux-Français [1977, fre] **I-19464**
Effectiveness of collecting meteorological data in Antarctica by means of simultaneous or consecutive querying of stations by shortwave [1977, rus] **I-20169**
A.P.T. Station Marambio: receiver of weather satellite pictures [1975, spa] **I-20253**
Review of the NOAA (NWS) meteorological program in the Antarctic [1976, eng] **I-21661**

Whales
See: Mammalia-Cetacea

Whaling
International moratorium on whales [1976, spa] **A-20195**
International whaling statistics, No.73 [1974, eng] **A-20353**
International whaling statistics, No.74 [1974, eng] **A-20354**
Resource exploitation [1974, eng] **A-20575**
Whaling in the Southern Ocean, 1785-1825 [1972, eng] **A-20693**
Principles and methods of whaling regulation [Pt.1] [1977, rus] **A-21712**
Whale conservation: role of the International Whaling Commission [1977, eng] **B-19457**
Whale stocks—exploitation or moratorium [1977, eng] **B-19458**
Assessment of antarctic minke whale stocks [1976, eng] **B-20152**
Reproduction of the minke whale in the south Indian Ocean [1976, eng] **B-20153**
Attempt to standardize fishing efforts as applied to the stock assessment of the minke whale in the Antarctic Area IV [1976, eng] **B-20154**
Conservation of southern ocean marine resources [1978, eng] **B-20223**
Twenty-ninth annual meeting of the International Whaling Commission, 1977 [1978, eng] **B-20322**
Penguins, whalers, and sealers: a voyage of discovery [1977, eng] **B-20497**
Fish as sperm whale prey in Southern Ocean whaling zones [1973, rus] **B-20582**
Report and papers of the Scientific Committee of the Commission on Whaling [1975, eng] **B-20655**
Whale marking—progress report 1975 [1976, eng] **B-20656**
Maximum sustainable yield in weight and related matters [1976, eng] **B-20658**
More flexible model for baleen whale populations [1976, eng] **B-20660**
Estimation of antarctic minke whale population [1976, eng] **B-20662**
Male sperm whale density trends in the southern hemisphere [1976, eng] **B-20663**
Japanese pelagic whaling and sighting in the Antarctic, 1974/75 [1976, eng] **B-20664**
Stock assessments of minke whales [1976, eng] **B-20665**
Japan progress report on whale research, June 1974 to May 1975 [1976, eng] **B-20666**
Soviet research on cetaceans during the seasons of 1974 and 1974-1975 [1976, eng] **B-20667**

Analysis of the stock-recruitment relation in antarctic fin whales *(Balaenoptera physalus)* [1973, eng] **B-20731**
Chemical composition of body parts of the antarctic sperm whale [1972, rus] **B-20809**
Population biology and the management of whales [1976, eng] **B-20834**
Report on Japanese Antarctic Whaling Expedition, 1974-1975 [1975, eng] **B-21015**
Report of guest on Antarctic Whaling Expedition No.30 [1976, eng] **B-21016**
Whale marking: a short review [1977, eng] **B-21027**
Whaling: past, present and future [1978, eng] **B-21173**
Thirtieth annual meeting of the International Whaling Commission, 1978 [1979, eng] **B-21719**
Voyages to the Kerguelen Islands from 1772-1950 [1976, fre] **D-20348**
Seasonal and annual variations in water temperature and salinity near South Georgia, 1925-1937 [1977, eng] **J-20617**
Congressional hearings on whale conservation [1976, eng] **M-20379**

Whistlers
See under: VLF emissions

Wind
Sea ice studies in the Weddell Sea region aboard USCGC *Burton Island* [1977, eng] **F-19706**
Wind drift of antarctic sea ice [1977, eng] **F-19788**
Glaciological studies in Mizuho Plateau, East Antarctica, 1969-1975 [1978, eng] **F-19819**
Distribution of surface features of snow cover in Mizuho Plateau [1978, eng] **F-19824**
Controlling factors of drifting snow [1978, eng] **F-19827**
Glaciological survey in 1976-1977 [1978, eng] **F-20077**
Icebergs in the Southern Ocean [1976, eng] **F-20247**
Environmental factors along an iceberg tow route in the Indian Ocean [1978, eng] **F-20471**
Energy balance at two stations of the Ampère Glacier, Kerguelen Islands [1978, fre] **F-20734**
Flow-visualization by means of soap bubbles on snowdrift around the huts at Syowa Station [1978, jap] **F-20824**
Large-scale numerical model of sea ice [1979, eng] **F-21132**
Visibility in blowing snow and applications in traffic operations [1978, eng] **F-21715**
Time limit for outdoor activity in Antarctica as a function of wind speed and air temperature [1978, rus] **H-21046**
Sulfur dioxide and fall dust at Showa in summer [1977, jap] **I-19291**
Meteorological data at Mizuho Camp, Antarctica in 1976-1977 [1977, eng] **I-19360**
Automatic Weather Station in Antarctica [1977, eng] **I-19362**
Meteorological phenomena in Antarctica [1963, jap] **I-19444**
Study of the climate of the Kerguelen Islands and subantarctic region of the Indian Ocean. Climatology of Port-aux-Français [1977, fre] **I-19464**
A cold, low-level jet stream in the Bransfield Strait [1977, eng] **I-19705**
Wind chill index as applied to three Chilean antarctic bases [1972, spa] **I-19794**
Observations of sea-salt particles in the air in Mizuho Plateau [1978, eng] **I-19828**
Seasonal variations of meteorological elements at Mizuho Plateau [1978, eng] **I-19829**
Soviet antarctic data on temperature, humidity, and wind speed [1977, rus] **I-19842**
Antarctic meteorological data, 1975 [1975, eng] **I-19943**
Antarctic meteorological data, 1976 [1976, eng] **I-19944**
Temperature and wind velocity variations in the winter polar mesosphere [1974, eng] **I-20135**
Climate of the upper air: Southern Hemisphere. Vol.3. Vector mean geostrophic winds: isogon and isotach analyses [1971, eng] **I-20140**
Surface atmospheric tides in New Zealand [1977, eng] **I-20186**
Description of the geostrophic wind in the southern hemisphere [1974, eng] **I-20597**
Zonal mean characteristics of wind speed in the southern hemisphere [1978, rus] **I-20647**
Wind regime features on Deception Island [1978, rus] **I-20728**
Air temperature and two-dimensional wind profiles in the lowest 32 meters as a function of bulk stability [1977, eng] **I-20934**
Stability-related wind spiraling in the lowest 32 meters [1977, eng] **I-20935**
Variations of temperature and air motion in the 0- to 32-meter layer at Plateau Station, Antarctica [1977, eng] **I-20936**
Meteorological data at Mizuho Station, Antarctica in 1977-1978 [1978, eng] **I-20999**
Observed zonal wind cycle in the southern hemisphere stratosphere [1979, eng] **I-21314**
Early winter storms in the northwestern Weddell Sea [1978, eng] **I-21610**
Boundary layer research at South Pole Station using acoustic remote sensing [1978, eng] **I-21612**
Surface energy balance measurements at the South Pole [1976, eng] **I-21662**
Effect of meridional circulation in large scale current topography interactions [1977, eng] **J-19630**
Circulation of the world ocean: global studies [1977, eng] **J-19782**
Satellite-tracked drifters between Africa and Antarctica [1978, eng] **J-19812**
Study of the east-west antarctic current by means of icebergs tracked by the EOLE satellite [1977, eng] **J-20026**
Variability of the antarctic polar frontal zone [1978, eng] **J-20532**
Energy flux in the solar wind and magnetospheric substorms [1978, eng] **K-21631**
On hydrometeorological conditions of microseisms generation [1973, eng] **L-19572**
See also under: Upper air

KATABATIC
Atmospheric surface layer over bare ice in the Yamato Mountains [1978, jap] **F-20083**
Vertical structure of katabatic winds in Mizuho Plateau [1978, eng] **I-19826**
Vapor pressure and sublimation in Antarctica [1978, eng] **I-20082**
Synoptic patterns and weather at McMurdo [1977, eng] **I-20492**
Katabatic wind in the Molodezhnaya Station area and forecasting it [1978, rus] **I-20764**

Worms
See: Vermes

Yeasts
See: Thallophyta-Fungi

Zoogeography
See under: Biogeography

Zoology
Beaks, nets and numbers [1977, eng] **B-20554**
Littoral ecology of Marion and Prince Edward Islands (Southern Ocean) [1976, eng] **B-20835**
Wildlife in the Antarctic [1978, eng] **B-20925**
Lichen-invertebrate associations [1977, eng] **B-21176**
Zoological research in the Chilean Antarctic [1977, spa] **B-21293**
See also: Biogeography/Zoogeography; Ecology/Faunal

GEOGRAPHIC INDEX

Ace Lake
Occurrence of *Paralabidocera antarctica* (I.C. Thompson) (Copepoda: Calanoida: Acartiidae) in an antarctic saline lake [1978, eng] **B-21351**

Adelaide Island
Pentobarbitone as an anaesthetic agent in Adelie penguins [1975, eng] **B-21114**
Climatic charts for BAS stations, 1971 [1976, eng] **I-19557**
Climatic charts for BAS stations, 1972 [1976, eng] **I-19558**

Adélie Coast
Viviparous echinoderms from the South Atlantic [1965, spa] **B-19412**
Physiological data on the Emperor penguin [1972, fre] **B-20898**
Accumulation of snow and radioactive debris in Antarctica [1977, eng] **F-20117**
Radiocarbon studies of atmospheric CO2 [1972, eng] **I-19845**
On the polarization and origin of auroral kilometric radiation [1978, eng] **K-19873**
F-lacuna events [1978, eng] **K-20629**

Alasheyev Bight
Geodetic work in Alasheyev Bight [1968, eng] **C-20341**
New data on the physics of antarctic sea ice [1968, eng] **F-20331**
Influence of diatoms on the structure and strength of sea ice [1968, eng] **F-20332**
Results of ice observations in Alasheyev Bight [1968, eng] **F-20336**
Structure and characteristics of fast ice in Alasheyev Bight [1968, eng] **F-20337**
Salt and phase composition of pack ice during growth and destruction [1978, rus] **F-20723**
Site selection for Molodezhnaya Station [1968, eng] **G-20334**
Organization of the new Soviet station Molodezhnaya [1968, eng] **G-20343**
Tidal observations in the region of Molodezhnaya Station [1968, eng] **J-20335**
Hydrographic investigations of approaches to the Antarctic station Molodezhnaya [1968, eng] **J-20338**

Alexander Island
Sedimentary rocks from Charcot Island [1976, eng] **E-19565**
Aeromagnetic survey over southern Graham Land: a preliminary report [1976, eng] **L-19549**

Allan Hills
Search for meteorites [1978, jap] **E-20439**
Beacon Supergroup in the Allan Hills, central Victoria Land, Antarctica [1977, eng] **E-20752**

Amery Ice Shelf
Glacial geomorphology of the Lambert Glacier and its surrounding mountains [1977, eng] **E-21384**
Structure of shore ice along the Amery Ice Shelf [1977, eng] **F-19404**

Amsterdam Island
French southern and antarctic territories, 1772-1972 [1973, fre] **A-20241**
Studies of terrestrial microarthropods on Amsterdam and St. Paul Islands. 1. Amsterdam Island: preliminary quantitative study [1973, fre] **B-19308**
Production of lobsters in the waters of Saint Paul and Amsterdam Islands [1977, eng] **B-20044**
Phylica nitida on Amsterdam Island [1976, fre] **B-20346**
Rodriguez, Darwin, Amsterdam, ... a second type of hotspot island [1978, eng] **L-21052**

Amundsen-Scott Station
1974 visit to the new South Pole Station [1976, jap] **A-19426**
Snow crystals at the South Pole [1975, jap] **F-20051**
Solar activity records planetary ice caps [1978, eng] **F-21407**
Aluminum home for researchers [1977, ger] **G-19367**
Geodesic dome at Amundsen-Scott [1975, spa] **G-20256**
New South Pole station [1974, eng] **G-20577**
Temperature regime of the South Pole [1977, eng] **I-19694**
Geophysical monitoring for climatic change at the South Pole [1977, eng] **I-19695**
Atmospheric electric measurements at the South Pole: the krypton-85 question [1977, eng] **I-19698**
Atmospheric processes and energy transfers at the South Pole [1977, eng] **I-19700**
Lidar and replication studies of ice crystal precipitation at the South Pole [1977, eng] **I-19701**
Acoustic sounder operations at South Pole Station [1977, eng] **I-19702**
Carbon dioxide reference and gas and air analysis [1962, eng] **I-19744**
Trace metals in the antarctic atmosphere [1974, eng] **I-20224**
Polarizing radiometer measurements of skylight at South Pole station, Antarctica [1977, eng] **I-20899**
Geophysical monitoring for climatic change, No.6. Summary report 1977 [1978, eng] **I-21405**
Atmospheric ice crystals at the South Pole in summer [1978, eng] **I-21609**
Spectroscopic studies at McMurdo, South Pole, and Siple stations [1978, eng] **I-21611**
Boundary layer research at South Pole Station using acoustic remote sensing [1978, eng] **I-21612**
Particles in the air at the South Pole [1978, eng] **I-21621**
Atmospheric electric measurements at the South Pole [1976, eng] **I-21663**
Iodine, bromine and chlorine in the antarctic atmosphere [1976, eng] **I-21665**
Atmospheric acoustic echo sounding investigations at the South Pole [1976, eng] **I-21666**
Balloon sounding the stratospheric sulfate aerosol layer [1976, eng] **I-21667**
Polar aerosol-climatic implications [1976, eng] **I-21670**
Lidar and replicator measurements of ice crystal precipitation at South Pole [1976, eng] **I-21671**
Atmospheric concentrations and sources of trace metals at the South Pole [1976, eng] **I-21673**
High-latitude ionospheric absorption [1977, eng] **K-19719**
Upper atmosphere research in Antarctica [1978, eng] **K-20291**
Polar cap geomagnetic variations studies [1978, eng] **K-21633**
Light intensity and polarization measurements at the South Pole [1976, eng] **K-21664**
Free oscillations of the Earth and tilt at the South Pole [1978, eng] **L-21526**

Amundsen Sea
Outcrops, currents and facies in the east Pacific antarctic zone [1977, fre] **J-20863**

Andrus, Mount
Age of Mount Andrus and Sr 87/Sr 86 ratio of volcanic rocks in Marie Byrd Land and the South Shetlands [1973, spa] **E-21087**

Antarctic Peninsula
Scenery of the south: Falkland Islands, South Georgia, Subantarctic islands [1975, eng] **A-19370**
Antarctic echinoderms. III. Ophiuroidea 1. Ophiuroidea of the extreme north of the Antarctic Peninsula [1974, spa] **B-19332**
Tardigrada from the Antarctic Peninsula and Scotia Ridge region [1976, eng] **B-19561**
New distribution of *Champsocephalus gunnari* Lönnberg (Pisces, Chaenichthyidae) [1970, spa] **B-19738**
Bryozoan epizoa of *Laetmonice producta* Grube (Annelida, Polychaeta) [1972, spa] **B-19792**
Man's impact along the Antarctic Peninsula [1978, eng] **B-19986**
Copepod from the Antarctic Peninsula is redescribed [1978, eng] **B-20086**
Antarctic fur seal in the Chilean Antarctic [1977, spa] **B-20908**
Geochronology in relation to the stratigraphy of the Antarctic Peninsula [1976, eng] **E-19548**
Geology of the Antarctic Peninsula [1978, eng] **E-20236**
Buchites in basalts in the Payún Matrú volcano and the Matienzo Base in the Argentine Antarctic [1966, spa] **E-20944**

Paulet Island and recent volcanism in the islands of the northwest Weddell Sea [1973, spa] E-21086
Geologic studies in the northern Antarctic Peninsula [1978, eng] E-21505
Glaciological research in the Antarctic Peninsula [1977, eng] F-19477
Antarctic ice and history of world climate [1975, spa] F-20260
Spatial distribution of 10 m temperatures in the Antarctic Peninsula [1978, eng] I-20653
Paleomagnetic results, Antarctic Peninsula [1978, eng] L-20862

Anvers Island
First record of *Ereynetes macquariensis* from Anvers Island [1977, eng] B-19378
Limnology of fresh water lakes at Anvers Island, Antarctica [1971, eng] B-19490
Nonasellote isopod crustaceans from Anvers Island and other antarctic locations [1978, eng] B-20852

Argentine Islands
Ozone measurements at British Antarctic Survey stations [1977, eng] I-19479
Atmospheric radiocarbon on subantarctic islands and Halley Bay [1970, eng] I-19844

Arthur Harbor
Nesting behavior of *Harpagifer bispinis* [1978, eng] B-20546

Asgard Range
Geology of New Mountain sandstone, South Victoria Land [1974, eng] E-21495

Assender Glacier
Flow rate and ice discharge of the Hays, Campbell and Assender Glaciers, Enderby Land, Antarctica [1977, ger] F-21156

Atlantic Ocean
Silica in the near-bottom Atlantic [1975, eng] J-20506

Auckland Island
Feral pigs on Auckland Island [1975, eng] B-20837
Note on the food of feral pigs *(Sus scrofa)* of Auckland Island [1976, eng] B-20838

Auckland Islands
History and status of goats on the Auckland Islands [1977, eng] B-19806
Auckland Islands Dotterel [1978, eng] B-20591
Case for controlling the distribution of the tree daisy *(Olearia lyallii)* Hook.f. in its type locality, Auckland Island [1976, eng] B-20839
Subantarctic Pteridophyta: observations and new records [1978, eng] B-21357

Augusta, Mount
Coal forming elements in permineralized peat from Mountain Augusta (Queen Alexandra Range) [1977, eng] E-19662

Balleny Islands
Dynamics of the Balleny ice ridge [1978, rus] F-20762

Beardmore Glacier
New Zealand topographic survey in Ross Dependency [1963, eng] C-19279
Permian and Triassic Beacon rocks near Beardmore Glacier [1968, eng] E-19250
Anatectic origin of late orogenic granitic intrusions of the Hope and Ida groups in the Beardmore Glacier area, Antarctica [1972, rus] E-20134
Palynological study of triassic samples from the Beardmore Glacier area in Antarctica [1974, eng] E-21485

Belgrano Station
Directives for the Winter Antarctic Project CINIAA 1968—Belgrano Station [1967, spa] A-19974
LABEL, Upper Atmosphere Physics Laboratory, General Belgrano Station [1973, eng] G-19951
Auroral activity at Belgrano Station [1978, eng] K-20880

Bellingshausen Sea
Krill and hydrographic conditions off the Antarctic Peninsula [1978, eng] B-21348
Sedimentation processes and acoustic stratigraphy in the Bellingshausen Basin [1977, eng] E-19264
Outcrops, currents and facies in the east Pacific antarctic zone [1977, fre] J-20863
Abyssal traces and megafauna in the Arctic and Antarctic [1978, eng] J-21452

Bellingshausen Station
U.S.S.R. national report to SCAR, No.19 [1977, eng] A-19568
U.S.S.R. national report to SCAR, No.20 [1978, eng] A-21064
Cold weather clothing with electric heating units [1976, eng] G-20989

Bird, Cape
Diurnal rhythm of activity by the Adelie penguin [1977, eng] B-19450
Diurnal activity of Adelie penguins at Cape Bird [1978, eng] B-20016

Black Island
Penguin and seal carcasses on Black Island [1978, eng] B-20592
Geological studies in the McMurdo region [1978, eng] E-21506
Petrographic and paleontological study of lower Tertiary erratics from Quaternary moraines, Black Island, Antarctica [1974, eng] E-21656

Blue Glacier
Geology of the region between the Renegar and Blue Glaciers [1978, eng] E-20320

Bonney, Lake
Potential impact on Lake Bonney of activities associated with modeling freshwater antarctic ecosystems [1978, eng] B-19983
Nutrient fluxes in Lake Bonney—a meromictic antarctic lake [1977, eng] B-20892
Dating of geochemical events in Lake Bonney, Antarctica, and their relation to glacial and climate changes [1977, eng] E-20757
Development and use of a mathematical model for an antarctic lake [1978, eng] E-21238

Bounty Islands
K-Ar ages of Bounty Islands granites and metasediments [1978, eng] E-20541

Bouvet Island
Cold-hardiness of *Cryptopygus antarcticus* (Collembola) from Bouvetöya [1978, eng] B-21243
Geology and geochemistry of Bouvet Island [1976, eng] E-20146

Boyd Glacier
Reconnaissance geologic map of the Boyd Glacier quadrangle, Marie Byrd Land, Antarctica [1977, eng] E-19400

Bransfield Strait
A cold, low-level jet stream in the Bransfield Strait [1977, eng] I-19705
Basin waters of the Bransfield Strait [1978, eng] J-19913

Brown Station
Directives for the winter antarctic project CINIAA 1969—Brown Station [1968, spa] A-19976
Directives for the antarctic winter project CINIAA 1970—Brown Station [1969, spa] A-19977
Scientific station Almirante Brown [1973, eng] G-19949

Byers Peninsula
Valanginian fauna in the Byers Peninsula, Livingston Island [1976, spa] E-21085

Byrd Station
Compositions of three tephra layers from the Byrd Station ice core, Antarctica [1978, eng] E-21239
Internal structure and crystal fabrics of the West Antarctic ice sheet [1976, eng] F-19330
Gas content of ice caps [1977, fre] F-19424
Application of the continuity equation to the ice sheet, Byrd Station [1977, eng] F-19801
Influence of climatic and glaciological factors on paleotemperature of continental ice sheets [1976, rus] F-19973
Impurities and seismic wave attenuation in the West Antarctic ice sheet [1977, eng] F-20108
Total gas content in polar ice: rheological and climatic implications [1977, eng] F-20126
Dyke-sill thermal convection in polar ice sheets [1977, eng] F-20127
Variations in Greenland and Antarctic deep ice cores [1977, eng] F-20128
Composition of gas contained in polar ice [1977, fre] F-20129
X-ray diffraction topographic studies of Antarctic deep core ice [1978, eng] F-20211

Byrd Station *(cont.)*
Surface variability and ice core stratigraphy [1978, eng] **F-20652**
Investigation of creep instability as a mechanism for glacier surges [1978, eng] **F-21203**
Ultrasonic measurements on deep ice cores from Antarctica [1978, eng] **F-21530**
Glaciology near Byrd Station [1978, eng] **F-21534**
Measurement of argon isotopes in air samples and comparison with computations from a model [1973, ger] **I-19344**
Outlying plasmasphere structure detected by whistlers [1976, eng] **K-20215**
Eastward movement of the structure of auroral radio absorption events in the morning sector [1976, eng] **K-20689**
Belcher Islands Expedition—1971 [1971, eng] **K-21479**
Magnetograms and hourly values: Byrd Station, Antarctica [1964, eng] **L-19486**

Campbell Glacier
Flow rate and ice discharge of the Hays, Campbell and Assender Glaciers, Enderby Land, Antarctica [1977, ger] **F-21156**

Campbell Island
Campbellenchinae (Nematoda: Tylodoridae), a new subfamily from Campbell Island, with a description of two new species [1977, eng] **B-20163**
Subantarctic Pteridophyta: observations and new records [1978, eng] **B-21357**
Campbell Island geology [1978, eng] **E-20542**
Fluctuations and trends in indices of the southern hemispheric circulation [1975, eng] **I-19273**
Micropulsations observed by whistler-mode transmissions [1978, eng] **K-20979**
Phenomenon of sporadic E-layer conjugation [1976, eng] **K-21008**

Cape Crozier
Growth of Emperor penguin chicks at Cape Crozier, Ross Island, Antarctica [1972, eng] **B-21056**
Population study of south polar skuas *(Catharacta maccormicki)* age one to eight years [1972, eng] **B-21057**

Casey Station
Observed zonal wind cycle in the southern hemisphere stratosphere [1979, eng] **I-21314**

Cerda Station
Wind chill index as applied to three Chilean antarctic bases [1972, spa] **I-19794**

Charcot Island
Sedimentary rocks from Charcot Island [1976, eng] **E-19565**

Chilean Archipelago
Mineralogy and chemistry of suspended sediments [1977, eng] **E-19642**

Cordiner Peaks
Geology of Davis Valley and Cordiner Peaks [1978, eng] **E-21258**

Crozet Island
Freshwater algae from Crozet and Kerguelen Islands (excluding diatoms). 2. Examination of specimens taken in 1973 and 1974 [1977, fre] **B-20930**
Bird ringing in the Crozet Archipelago, Kerguelen, New Amsterdam and St. Paul Islands [1976, eng] **B-21372**

Crozet Islands
French southern and antarctic territories, 1772-1972 [1973, fre] **A-20241**
New species of "tentacled" marine fish leech parasitic on *Notothenia* from the subantarctic Marion and Crozet Islands [1972, eng] **B-19310**
Hydroids from the Kerguelen and Crozet shelves, collected by the cruise MD-03 of the *Marion Dufresne* [1977, eng] **B-19364**
Craniometric data on wild rabbits and cats of Hog Island [1976, fre] **B-19506**
Subantarctic mites [1976, fre] **B-20056**
Bird ringing in the Crozet Archipelago, Kerguelen, New Amsterdam and St. Paul Islands [1976, eng] **B-20777**
New apteran Sphaerocerid from the Crozet Islands [1975, fre] **B-20841**

Crozier, Cape
Activity patterns and social behavior of non-breeding Adelie penguins [1978, eng] **B-20621**

Dana Mountains
Petrology of the Dana Mountains, Antarctic Peninsula [1978, eng] **E-19779**

Darwin Mountains
Coastal geology of the Darwin Mountains and Tierra del Fuego [1977, spa] **E-21335**

Davis Sea
Fecundity of crustaceans along the Davis Sea shores [1978, rus] **B-21436**
New species of *Acanthonotozomella* from the Davis Sea (East Antarctica) [1978, rus] **B-21441**
Maximum size of a wind-generated lead during sea freezing [1968, eng] **F-20234**
Melting and disintegration of shore ice in the Davis Sea [1968, eng] **F-20330**

Davis Station
Report of an ANARE observer [1976, jap] **A-19429**

Davis Valley
Geology of Davis Valley and Cordiner Peaks [1978, eng] **E-21258**

Deception Island
South Shetland Islands [1977, rus] **A-21158**
New distribution of *Champsocephalus gunnari* Lönnberg (Pisces, Chaenichthyidae) [1970, spa] **B-19738**
Bryozoan species new to Antarctica [1975, spa] **B-19846**
Some Antarctic dinoflagellates and tintinnids [1975, spa] **B-19996**
Plankton of Foster Bay, Deception Island, December 1970 [1977, spa] **B-20909**
Geochemistry of basalt-sea-water interactions: evidence from Deception Island, Antarctica, and Reykjanes, Iceland [1977, eng] **E-20618**
Wind regime features on Deception Island [1978, rus] **I-20728**

Deep Lake
Primary productivity of a hypersaline antarctic lake [1978, eng] **B-21350**

Don Juan Pond
Potential environmental impact of diamond drilling [1976, eng] **E-19463**

Doumer Island
Fish populations of Doumer Island, Antarctic Peninsula [1977, spa] **B-20911**

Drake Passage
Contribution to the knowledge of the Decapod Crustacea of Tierra del Fuego with some zoogeographical observations [1977, spa] **B-21429**
Opening of Drake Passage [1977, eng] **E-19256**
History of sediment lithofacies in the South Atlantic Ocean [1977, eng] **E-19852**
Polar Experiment South-76 [1978, rus] **I-20633**
Antarctic polar front in the Drake Passage [1978, rus] **I-20638**
Features of atmospheric processes over the Drake Passage and nearby portions of the Southern Ocean, summer 1976 [1978, rus] **I-20642**
Summer turbulent atmosphere-ocean exchange in the Drake Passage in 1976 [1978, rus] **I-20643**
Free-atmosphere energy characteristics over the Drake Passage in the summer of 1976 [1978, rus] **I-20644**
Relationship between the antarctic oceanic polar front and free-atmosphere processes [1978, rus] **I-20646**
Oceanography and sedimentology of Drake Passage, Antarctica [1968, eng] **J-19270**
Structure and transport of the Antarctic Circumpolar Current at Drake Passage from short-term measurements [1977, eng] **J-19318**
Variability of deep flow in the Drake Passage [1977, eng] **J-19319**
Antarctic Polar Frontal Zone from Australia to the Drake Passage [1977, eng] **J-19320**
Water budget of Drake Passage and Scotia Sea basin [1977, eng] **J-19373**
Moored temperature time series in the Polar Front Zone during FDRAKE, 1976 [1977, eng] **J-19625**
Currents and water masses in the vicinity of Drake Passage [1977, eng] **J-20027**
Observations of the Antarctic Polar Front by a moored array during FDRAKE-76 [1977, eng] **J-20098**
POLEX-South program in 1975 and 1976 [1978, rus] **J-20634**
Studying Southern Ocean circulation [1978, rus] **J-20635**

Horizontal circulation in the Drake Passage [1978, rus] J-20636
Current measurement by means of buoys in the Drake Passage [1978, rus] J-20637
Observations of water temperature variations in the Drake Passage, summer 1976 [1978, rus] J-20639
Drake Passage water masses in the summer [1978, rus] J-20640
Phosphate content in Drake Passage water [1978, rus] J-20641
Features of radiation balance at the water surface in the Drake Passage, summer 1976 [1978, rus] J-20645
Light-scattering observations in frontal zones [1978, eng] J-20710
Effects of transverse ridges on circumpolar oceanic flow [1977, eng] J-20842
Biogeographic aspects of the distribution and dynamics of water masses off the South American coast [1978, eng] J-20933
Anatomy of the Antarctic Polar Front in the Drake Passage [1978, eng] J-21048
Isohaline thermoclines in the southeast Pacific Ocean [1978, eng] J-21131
Scattering of Rossby waves by partial barriers [1972, eng] J-21205
Observations of antarctic polar front motions in a deep water expression [1979, eng] J-21227
Structure of the Antarctic Circumpolar Current in the Drake Passage [1978, rus] J-21355
Oceanographic data collected aboard R/V *Melville* during January-February 1977 as a part of FDRAKE 77 [1978, eng] J-21379

Dronning Maud Land
Prostigmate mites from Dronning Maud Land [1977, eng] B-21229

Dufek Massif
Geology of the Dufek intrusion in Antarctica [1975, jap] E-20050

Dumont d'Urville Station
French cold regions tasks accomplished, 1972 [1972, fre] A-20321
Perturbation of upper ionospheric profile associated with the magnetospheric cleft in local summer in Antarctica [1977, fre] K-19335
Visual observations of auroras: Dumont d'Urville Base [1977, fre] K-19739
Structure of the bursts of auroral protons [1976, rus] K-19776
On high-latitude CNA, G-lacuna and SEC [1978, eng] K-20099
F-lacuna events [1978, eng] K-20629

East Antarctica
Size of an antarctic mite shows geographic variation [1978, eng] B-20075
Leafy mosses of East Antarctica [1978, rus] B-20429
Comparison of geological structure of southeast Indostan and Sri Lanka with Enderby Land, Mac. Robertson Land and Princess Elizabeth Land in East Antarctica [1978, rus] E-21699
East Antarctic pack ice [1977, rus] F-19841
Distribution of mean surface stable isotope values [1977, eng] F-20115
Trace element content in East Antarctica snow samples [1977, eng] F-20118
Glaciological studies on the IAGP program in a new area of Eastern Antarctica [1977, rus] F-20172
Some features of formation of oxygen isotopic composition in East Antarctic snow cover [1978, rus] F-21486
905-meter deep core drilling at dome C and related surface programs [1978, eng] F-21532

East Base
East Base, Stonington Island, Antarctic Peninsula [1978, eng] G-21648

Eights Coast
Geology of Marie Byrd Land and Eights Coast [1976, rus] E-19277

Eights Station
Sky-Hi Station report, Dec. 1961-Feb. 1962 [1962, eng] K-19743
Outlying plasmasphere structure detected by whistlers [1976, eng] K-20215
Whistler observations of substorm electric fields in the nightside plasmasphere [1978, eng] K-21059

Ellsworth Land
Late Jurassic bivalves from Ellsworth Land [1977, eng] E-20755
Geologic studies in Orville Coast and eastern Ellsworth Land, Antarctic Peninsula [1978, eng] E-21501
Stratigraphical studies in Orville Coast and eastern Ellsworth Land [1978, eng] E-21502

Ellsworth Mountains
Geological research in the Ellsworth Mountains: Norwegian Expedition 1974-75 [1976, jap] E-19425
Geology of the Ellsworth Mountains to Thiel Mountains ridge [1977, eng] E-19646
Paleontological investigations in the Ellsworth Mountains [1977, eng] E-19668

Enderby Land
Survey of a traverse on the Antarctic inland ice [1975, ger] C-19501
Photogrammetric studies of a group from the G.D.R. during the 17th Soviet Antarctic Expedition [1975, ger] C-19503
Accuracy of trigonometric leveling above ice at stable stratification of temperature and refraction [1975, ger] C-19504
"Mountains of German-Soviet friendship" in Enderby Land (Antarctica) [1977, ger] C-21083
Early Azoic age of the earth's oldest rocks (based on results of lead-isotope studies of crystalline mountain rocks from the Antarctic platform) [1976, rus] E-19791
Geological structure of the western part of Enderby Land [1968, eng] E-20339
Geological features of the western part of Enderby Land [1968, eng] E-20340
Petrologic study of the granulite-facies metamorphic rocks of Enderby Land [1978, eng] E-21497
Results of aerogravimetric studies in Antarctica [1975, rus] L-20382

Erebus Glacier Tongue
Erebus glacier tongue movement [1978, eng] F-21540
Surface strain measurements on sea ice and on Erebus Glacier Tongue [1978, eng] F-21543

Erebus, Mount
Volcanic activity at Mt. Erebus, 1977/78 [1978, eng] E-21522

Falkland Islands
Uncertain future of the Falkland Islands [1977, eng] A-19336
Scenery of the south: Falkland Islands, South Georgia, Subantarctic islands [1975, eng] A-19370
Falkland Islands [1974, eng] A-20246
Wildlife in the Falklands [1972, eng] B-19446
Pseudo-vivipary in Fuegian and Falkland Islands grasses [1976, eng] B-19553
Islands in the wind [1977, eng] B-20915
Energetics of the Falkland sprat *Sprattus fuegensis* Jenyns [1977, rus] B-21438
Paleoenvironmental analysis and correlation of a Cretaceous *Islas Orcadas* core from the Falkland Plateau, Southwest Atlantic [1977, eng] E-20137
Postglacial pollen diagrams from South Georgia (sub-Antarctic) and West Falkland Island (South Atlantic) [1978, eng] E-21215
Atmospheric radiocarbon on subantarctic islands and Halley Bay [1970, eng] I-19844
Coupling of mid-latitude spread-F between conjugate stations [1977, eng] K-20430
Chronicles of the South Atlantic: Patagonia, Falkland Islands and Antarctica [1974, spa] M-20174
Argentine plans to invade Falklands foiled [1975, eng] M-21273
Future of the Falkland Islands [1968, eng] M-21366
British-Argentine negotiations over the Falklands [1968, eng] M-21367
British relations with her Falkland subjects [1968, eng] M-21368

Fildes Peninsula
King George Island southern elephant seals [1978, rus] B-21464
Observations on King George Island birds [1978, rus] B-21465

Folger, Cape
Internal properties of the ice sheet at Cape Folger by radio echo sounding [1978, eng] F-20356

Forrestal Range
Geology of the Dufek intrusion in Antarctica [1975, jap] E-20050

Fosdick Mountains
Geology of the Fosdick Mountains, Marie Byrd Land, West Antarctica [1969, eng] E-19543

George VI Ice Shelf
Thermal stresses near the surface of a glacier [1978, eng] F-20651

Gerlache Strait
Geology of the Gerlache Strait, 64-65S [1976, spa] **E-21009**

Gibbs Island
Deformation, serpentinization and emplacement of a dunite complex [1977, eng] **E-19322**

Gough Island
News from the islands, Antarctica and SANAE [1977, eng] **A-19485**
Giant-petrels in the South Atlantic: new data from Gough Island [1976, eng] **B-19899**
Notes on seabirds at Gough Island [1976, eng] **B-19900**
Note on an echinoid from Gough Island, South Atlantic [1968, eng] **B-21063**
Petrology and age of Walvis Seamount and Gough Island volcanic tuffs [1977, eng] **E-19850**
Observations of the ionosphere over the South Atlantic Ocean [1976, eng] **K-19898**

Graham Land
Viviparous echinoderms from the South Atlantic [1965, spa] **B-19412**
Aeromagnetic survey over southern Graham Land: a preliminary report [1976, eng] **L-19549**

Green Island
Feeding habits of the blue-eyed shag [1976, spa] **B-21012**

Guest Peninsula
Reconnaissance geological map of the Guest Peninsula quadrangle, Marie Byrd Land, Antarctica [1977, eng] **E-19401**

Haag Nunataks
Age and position of the Ellsworth Mountains crustal fragment, Antarctica [1977, eng] **E-20090**

Hallett Station
Life cycle studies of some antarctic mites [1968, eng] **B-19518**
Feeding territories and breeding success of South Polar skuas [1978, eng] **B-19811**

Halley Bay
Snow accumulation, conductance and temperature inland from Halley Bay [1976, eng] **F-19545**
Distribution of artificial tritium in firn samples from East Antarctica [1977, eng] **F-20116**
Ozone measurements at British Antarctic Survey stations [1977, eng] **I-19479**
Climatic charts for BAS stations, 1971 [1976, eng] **I-19557**
Climatic charts for BAS stations, 1972 [1976, eng] **I-19558**
Atmospheric radiocarbon on subantarctic islands and Halley Bay [1970, eng] **I-19844**
Polarization characteristics and phase differences of Pi2 pulsations at conjugate stations [1978, eng] **K-21018**

Halley Bay Station
Effect of induced currents in the sea on magnetic bays [1978, eng] **K-20285**
Relationship between polar magnetic substorms, ionospheric height rises and the occurrence of spread-F [1978, eng] **K-20408**

Haswell Islands
Ecology of emperor penguins of the Haswell Archipelago [1977, rus] **B-19540**
Silver-grey fulmar *(Fulmarus glacialoides)* of the Haswell Archipelago [1978, rus] **B-20729**

Hays Glacier
Geodetic observation methods for surveying and monitoring Antarctic outflow glaciers [1975, ger] **C-19500**
Measurements of a barometric altitude profile in Enderby Land, Antarctica [1975, ger] **C-19502**
Studies of antarctic glacier structure [1978, rus] **F-20745**
Flow rate and ice discharge of the Hays, Campbell and Assender Glaciers, Enderby Land, Antarctica [1977, ger] **F-21156**

Heard Island
Mountain climbing on Heard Island [1963, eng] **A-21720**
Cladocera, Ostracoda, and freshwater Copepoda [1967, eng] **B-19956**

Hobbs Coast
Adélie penguin colonies on Hobbs Coast [1978, eng] **B-21593**
Geology of Marie Byrd Land and Eights Coast [1976, rus] **E-19277**
Geologic survey of Ruppert-Hobbs Coasts sector, Marie Byrd Land [1978, eng] **E-21499**

Holland Range
Stratigraphy and sediments of rocks in the Queen Maud Range area [1968, eng] **E-19462**

Hut Point Peninsula
Petrography and petrology of a basanitoid flow from Hut Point Peninsula, Antarctica [1974, eng] **E-19997**
Geology and volcanic history of Hut Point Peninsula [1978, eng] **E-20368**
Geology of DVDP 1 and the hyaloclastite of DVDP 3, Hut Point Peninsula, Antarctica [1978, eng] **E-21520**

Indian Ocean
Ornithological observations in the Australian sector of the Southern Ocean [1976, eng] **B-20053**
Food of Bryde's whales [1977, eng] **B-20093**
Ecology and biogeographic patterns of planktonic foraminifera [1977, eng] **B-20102**
Reproduction of the minke whale in the south Indian Ocean [1976, eng] **B-20153**
New species of copepods of the genus *Calocalanus* from the Indian sector of the Antarctic and the South Atlantic [1978, eng] **B-21401**
Clay minerals in southeast Indian Ocean sediments [1977, eng] **E-19262**
Last-abundant-appearance of a diatom in the Subantarctic [1978, eng] **E-19988**
Application of transfer functions to Indian Ocean planktonic foraminifera [1978, eng] **E-20803**
Comparison of radiolarian/planktonic foraminiferal paleooceanography of the subantarctic Indian Ocean [1978, eng] **E-20804**
Geomorphological map of the Indian Ocean and Pacific Ocean antarctic sectors [1978, rus] **E-20807**
Studies of deep-sea benthonic foraminifera in the southeast Indian Ocean [1978, eng] **E-21570**
Paleoclimatic applications of mean-size variations in *Globigerina bulloides* d'Orbigny [1978, eng] **E-21571**
Some regularities of distribution and formation of floating sea ice in the Antarctic [1968, eng] **F-20329**
New data on the physics of antarctic sea ice [1968, eng] **F-20331**
Results of iceberg observations [1968, eng] **F-20333**
Environmental factors along an iceberg tow route in the Indian Ocean [1978, eng] **F-20471**
Study of the climate of the Kerguelen Islands and subantarctic region of the Indian Ocean. Climatology of Port-aux-Français [1977, fre] **I-19464**
Results of meteorological observations [1968, eng] **I-20342**
Major features of oceanographic development interpreted from microfossils [1977, eng] **J-19257**
Biogenic elements of the troposphere and subtroposphere of the Indian Ocean [1973, rus] **J-19334**
Oceanographic data of the 17th JARE 1975-1976 [1977, eng] **J-19528**
Late Quaternary paleoceanographic events in the southeast Indian Ocean [1976, eng] **J-19914**
Sedimentation and Antarctic Bottom Water circulation in the southeast Indian Ocean [1978, eng] **J-19992**
Chlorophyll-a distribution in southern Indian Ocean [1978, eng] **J-20087**
C-13 change analysis of oceanic particulate organic matter [1973, eng] **J-20270**
Seventh voyage of the R/V *Ob'* [1968, eng] **J-20327**
Activities of the *Ob',* 1961-62 [1968, eng] **J-20328**
Hydrological characteristics and transequatorial transport in the west Indian Ocean [1976, eng] **J-20787**
Chemistry of particulate matter from the south Indian and Antarctic oceans [1978, eng] **J-21397**
Microseismicity near the Indian Ocean triple junction [1977, eng] **L-19910**

James Ross Island
Argentine geological research on James Ross Island [1975, spa] **E-20251**

Joinville Island
Bird and seal observations at Joinville Island and offshore islands [1978, eng] **B-21595**

Kerguelen Island
New distribution of *Champsocephalus gunnari* Lönnberg (Pisces, Chaenichthyidae) [1970, spa] **B-19738**
Magnetic quiet-day solar daily variations in magnetically conjugate regions [1977, eng] **K-19571**
Method of locating the Pc1 source and hot plasma parameters in the generation region [1979, eng] **K-21381**
Magnetic quiet-day solar daily variations in magnetically conjugate regions [1977, eng] **K-21398**

Kerguelen Islands
French southern and antarctic territories, 1772-1972 [1973, fre] **A-20241**
French cold regions tasks accomplished, 1972 [1972, fre] **A-20321**
Hydroids from the Kerguelen and Crozet shelves, collected by the cruise MD-03 of the *Marion Dufresne* [1977, eng] **B-19364**
Notes on the biology of the feral cat in the Kerguelen Islands [1976, fre] **B-19507**
Cladocera, Ostracoda, and freshwater Copepoda [1967, eng] **B-19956**
Subantarctic mites [1976, fre] **B-20056**
Bird ringing in the Crozet Archipelago, Kerguelen, New Amsterdam and St. Paul Islands [1976, eng] **B-20777**
Freshwater algae from Crozet and Kerguelen Islands (excluding diatoms). 2. Examination of specimens taken in 1973 and 1974 [1977, fre] **B-20930**
Bird ringing in the Crozet Archipelago, Kerguelen, New Amsterdam and St. Paul Islands [1976, eng] **B-21372**
Voyages to the Kerguelen Islands from 1772-1950 [1976, fre] **D-20348**
Plate tectonics: hot spot implicated in ridge formation [1978, eng] **E-20851**
Sounding methods for ice and glacier research [1970, fre] **F-20668**
Bedrock topography of Ampère Glacier (Kerguelen Islands, T.A.A.F.) [1978, fre] **F-20732**
Mass balance and oscillation of Ampère Glacier, Kerguelen Is. [1978, fre] **F-20733**
Study of the climate of the Kerguelen Islands and subantarctic region of the Indian Ocean. Climatology of Port-aux-Français [1977, fre] **I-19464**
Radiocarbon studies of atmospheric CO2 [1972, eng] **I-19845**
Auroral x-rays in conjugate regions [1970, eng] **K-20698**
Methods of whistler analysis. Pt.2. Application to whistlers observed on the ground [1977, fre] **K-20840**
Magnetic activity and subauroral ELF-VLF chorus [1975, eng] **K-21164**
The ARAKS project [1978, eng] **K-21408**
Payloads for rockets in atmospheric physics [1978, eng] **K-21409**
Electron accelerator for ARAKS [1978, eng] **K-21410**
Caesium plasma source for the ARAKS experiment [1978, eng] **K-21411**
Wave measurements in the ARAKS experiment [1978, eng] **K-21412**
Broad-band wave measurements in the ARAKS experiment [1978, eng] **K-21413**
Electron spectrometers for the study of artificially injected particles during the ARAKS experiments [1978, eng] **K-21414**
Wide-angle electron detector [1978, eng] **K-21415**
Low energy electron spectrometer *SERBE* [1978, eng] **K-21416**
Instrumentation aboard ARAKS Eridan rocket [1978, eng] **K-21417**
Ion analyzers for measurement of D.C. electric field and ion temperature [1978, eng] **K-21418**
Attitude measurement with Hall-effect magnetometers [1978, eng] **K-21419**
Optical observations systems for the ARAKS experiment [1978, eng] **K-21420**
Television system for observation of artificial aurorae in the conjugate region during the ARAKS experiment [1978, eng] **K-21421**
High sensitivity optical equipment for detection of weak luminous objects [1978, eng] **K-21422**
Modulation photometer used in ARAKS experiment [1978, eng] **K-21423**
Radiospectrograph used in the ARAKS experiment [1978, eng] **K-21424**
Ground-based observations of h.f. radioemission in ARAKS [1978, eng] **K-21425**
Observations carried out in the field at Kerguelen Station during the ARAKS experiment [1978, eng] **K-21426**
Description of the T.A.A.F. geodesic network, Kerguelen Islands [1976, fre] **L-20351**
Gravimetric earth-tide measurements at Kerguelen Islands [1976, eng] **L-20685**
Gravimetric earth tide station Kerguelen (Indian Ocean)—Results of the first measurement period January-May 1973 [1973, ger] **L-20687**

King George Island
Behavioral and ecological adaptations in pygoscelid penguins [1977, eng] **B-19600**
Kerguelen seals on King George Island [1977, rus] **B-19892**
Observations on King George Island birds [1978, rus] **B-21465**
Breeding status of southern elephant seals at King George Island [1978, eng] **B-21597**
Physical-geographic description of the Fildes Peninsula (South Shetland Islands) [1977, eng] **E-19372**

Koettlitz Glacier
Reconnaissance study of the McMurdo volcanics northwest of the Koettlitz Glacier [1978, eng] **E-20872**
Geology and geochemistry of Mt. Dromedary Massif [1978, eng] **E-20873**

Komsomolskaya Station
Time limit for outdoor activity in Antarctica as a function of wind speed and air temperature [1978, rus] **H-21046**

Lambert Glacier
Glacial geomorphology of the Lambert Glacier and its surrounding mountains [1977, eng] **E-21384**

Langhovde Hills
Saline lake algae in Antarctica [1978, jap] **B-20436**
Trace metals in Langhovde [1977, jap] **E-19294**
Interpretation of levelings and radiocarbon dating of Showa beaches [1977, eng] **E-20226**

Law Dome
Isotopes, climate and ice sheet dynamics [1977, eng] **F-20124**
Investigation of creep instability as a mechanism for glacier surges [1978, eng] **F-21203**

Lazarev Ice Shelf
Drilling through shelf ice near Novolazarevskaya Station [1978, rus] **F-20724**

Leningradskaya Station
U.S.S.R. national report to SCAR, No.19 [1977, eng] **A-19568**
U.S.S.R. national report to SCAR, No.20 [1978, eng] **A-21064**
Ice conditions in the Leningradskaya Station area [1978, rus] **F-20763**
Brief geographical and medical description of Leningradskaya Station [1978, rus] **H-21047**
Acclimatization of cardiovascular system at sea and on land [1978, rus] **H-21458**

Leverett Glacier
Geological investigations in the Leverett Glacier area [1978, eng] **E-21498**

Lister, Mount
Mountain climbing on Mt. Lister [1963, eng] **A-21721**

Lützow-Holm Bay
Saline lake algae in Antarctica [1978, jap] **B-20436**
Interpretation of levelings and radiocarbon dating of Showa beaches [1977, eng] **E-20226**

Mabus Point
Methods and results of studying radiation properties of snow-firn covers [1977, rus] **I-20426**

Mac. Robertson Land
Geological structure of Mac. Robertson Land (East Antarctica) [1978, rus] **E-20600**

Macquarie Island
Report of an ANARE observer [1976, jap] **A-19429**
Australian Museum Macquarie Island Expedition, 1977-78 [1978, eng] **A-20793**
Serum protein in southern fur seals [1970, eng] **B-19411**
Ecology of the feral cat, *Felis catus* (L.), (Carnivora: Felidae) on Macquarie Island [1977, eng] **B-19750**
Fishes of the genus *Neophrynichthys* [1977, eng] **B-19815**
Reproduction of some littoral molluscs from Macquarie Island (Subantarctic) [1977, eng] **B-19853**
Cladocera, Ostracoda, and freshwater Copepoda [1967, eng] **B-19956**

Macquarie Island *(cont.)*
Studies on the bryoflora of Macquarie Island, II [1978, eng] **B-20411**
Macquarie Island: a sub-Antarctic wonderland [1974, eng] **B-21084**
Corybas macranthus (Hook.f.) Reichb.f. (Orchidaceae), a new record for Macquarie Island [1978, eng] **B-21284**
Interbreeding by *Macronectes halli* and *M. giganteus* at Macquarie Island [1978, eng] **B-21316**
Reproduction of the rabbit, *Oryctolagus cuniculus* (L.), on Macquarie Island, Subantarctic [1978, eng] **B-21322**
Taxonomy and ecology of a new monocelid flatworm from Macquarie Island (Platyhelminthes, Turbellaria) [1977, eng] **B-21347**
Exploring Macquarie Island. Part 1. Southern wildlife outpost [1978, eng] **B-21373**
Exploring Macquarie Island. Part 2. Subantarctic refuge [1978, eng] **B-21374**
Outlying islands of Macquarie Island [1978, eng] **E-20847**
Observed zonal wind cycle in the southern hemisphere stratosphere [1979, eng] **I-21314**
Ionospheric origin for Pi 1 micropulsations [1976, eng] **K-19575**
Structure of the bursts of auroral protons [1976, rus] **K-19776**
Detecting geomagnetic pulsations using a solenoid with a ferrite core [1978, eng] **K-21021**
Stimulation of Pc1 micropulsations by controlled VLF transmissions [1977, eng] **K-21477**

Marie Byrd Land
Terrestrial arthropods, Marie Byrd Land, Antarctica [1978, eng] **B-21604**
Geology of Marie Byrd Land and Eights Coast [1976, rus] **E-19277**
Geology of Queen Maud Mountains and Marie Byrd Land [1977, eng] **E-19647**
Marie Byrd Land volcanology [1977, eng] **E-19656**
Volcanic history in Marie Byrd Land [1976, eng] **E-20149**
Age of Mount Andrus and Sr 87/Sr 86 ratio of volcanic rocks in Marie Byrd Land and the South Shetlands [1973, spa] **E-21087**
Regional distribution of Sr-87/Sr-86 ratios and mixing of sediments in the Ross Sea, Antarctica [1974, eng] **E-21484**
Volcanoes in the Hobbs Coast and Ruppert Coast sectors of Marie Byrd Land [1978, eng] **E-21521**
Reconnaissance of the glacial geology of Hobbs Coast and Ruppert Coast, Marie Byrd Land [1978, eng] **E-21529**
Investigations of seismic wave propagation in anisotropic and inhomogeneous media [1974, eng] **F-20782**

Marion Island
News from the islands, Antarctica and SANAE [1977, eng] **A-19485**
New species of "tentacled" marine fish leech parasitic on *Notothenia* from the subantarctic Marion and Crozet Islands [1972, eng] **B-19310**
House mice on Marion Island [1978, eng] **B-19952**
Subantarctic mites [1976, fre] **B-20056**
Two new lichens from Marion Island, southern Indian Ocean [1976, eng] **B-20096**
Lichens of Marion and Prince Edward Islands, southern Indian Ocean [1976, eng] **B-20097**
Animal-plant-soil nutrient relationships on Marion Island (Subantarctic) [1978, eng] **B-20165**
Seals of the Antarctic [1974, eng] **B-20576**
Altitudinal distribution and phenology of Marion Island vascular plants [1970, eng] **B-20586**
Littoral ecology of Marion and Prince Edward Islands (Southern Ocean) [1976, eng] **B-20835**
Geology and the distribution of Macaroni penguin colonies at Marion Island [1978, eng] **B-21154**
Interspecific breeding attempts by *Macronectes giganteus* and *M. halli* [1978, eng] **B-21315**
Ecology of a subantarctic island: 15 years on [1978, eng] **B-21318**
Soil chemistry of Marion Island (Subantarctic) [1978, eng] **E-20412**
Note on the daily variation of the geomagnetic vertical intensity at Marion Island [1976, eng] **K-19904**

Maudheim Station
On the nature of persistent stratospheric clouds in the Antarctic [1977, eng] **I-19816**

Mawson Station
Report of an ANARE observer [1976, jap] **A-19429**
Studies on the ecology of the vegetation at Mawson Station, Antarctica [1978, eng] **B-21323**
Sea ice and ocean energy balance studies at Mawson, Antarctica [1977, eng] **F-20891**

McMurdo Ice Shelf
Marine microfossils on the McMurdo Ice Shelf [1977, eng] **E-19644**
Geological studies in the McMurdo region [1978, eng] **E-21506**
Dielectric constant and reflection coefficient of snow surface layers in the McMurdo Ice Shelf [1977, eng] **F-19682**
Subsurface measurements of the Ross Ice Shelf, McMurdo Sound, Antarctica [1977, eng] **F-19689**

McMurdo Sound
Activities of Japanese party in McMurdo Sound area 1976-77 [1977, eng] **A-19529**
Principal findings of glaciological and geomorphological research in the McMurdo Sound region (Victoria Land) [1977, rus] **A-21140**
Reproductive periodicities in a common Antarctic asteroid [1965, eng] **B-19252**
Classification of terrestrial vegetation near McMurdo Sound, continental Antarctica [1973, eng] **B-19396**
Colonial behavior of antarctic marine mammals in eastern McMurdo Sound [1977, eng] **B-19597**
Processes organizing contrasting benthic communities of McMurdo Sound [1977, eng] **B-19608**
Microbial distribution and activity in and around McMurdo Sound [1977, eng] **B-19613**
Analysis of the dynamics of a Weddell seal population [1977, eng] **B-19751**
Physiological adaptation in antarctic fishes [1978, eng] **B-20314**
Marine nematodes from McMurdo Sound [1978, eng] **B-20854**
Long-term experimental benthic studies in McMurdo Sound [1978, eng] **B-21583**
Blood chemistry of freely diving Weddell seals [1978, eng] **B-21598**
Colonial behavior of the Weddell seal in eastern McMurdo Sound [1978, eng] **B-21599**
Soil development in the Taylor Valley and McMurdo Sound area [1977, eng] **E-19660**
Freshwater lakes in Pleistocene McMurdo Sound [1977, eng] **E-19666**
Late Neogene diatom biostratigraphy and paleoecology of the dry valleys and McMurdo Sound, Antarctica [1977, eng] **E-19998**
Water chemistry and sediments near McMurdo Sound [1978, eng] **E-20370**
Polar groundwater—a thermo-saline system [1978, eng] **E-21092**
Glacial geologic studies in the McMurdo Sound region [1978, eng] **E-21528**
Glacier history of the McMurdo Sound region [1977, eng] **F-19676**
Geochemical and isotope studies, Ross Ice Shelf Project [1977, eng] **F-19688**
Report of the Antarctic Ice Observing and Forecasting Program—1964 [1966, eng] **F-19946**
Report of the Antarctic Ice Observing and Forecasting Program—1965 [1967, eng] **F-19947**
Report of the Antarctic Ice Observing and Forecasting Program—1966 [1967, eng] **F-19948**
Axial double point-load tests on snow and ice [1978, eng] **F-20067**
Observations on submerged glacial ice in McMurdo Sound, Antarctica [1978, eng] **F-20392**
Iceberg thickness and crack detection [1978, eng] **F-20457**
Oceanographic data from McMurdo Sound [1977, eng] **J-19622**
Circulation across the ice shelf edge in McMurdo Sound, Antarctica [1977, eng] **J-20028**
Tritium and carbon-14 in seawater under the Ross Ice Shelf [1979, eng] **J-21100**

McMurdo Station
Ross Ice Shelf Project—benthic biology, 1976-1977 [1977, eng] **B-19614**
Taxonomy of antarctic bacteria from soils and air primarily of the McMurdo Station and Victoria Land dry valleys region [1978, eng] **B-20901**
Japanese scientific activities in the McMurdo region, 1976-1977 [1977, eng] **E-19653**
Antarctic search for meteorites [1977, eng] **E-19654**
Dismantling McMurdo's reactor [1977, eng] **G-19489**
U.S. Antarctic Support study extension: Case 10—McMurdo Station-Outer Williams Field military construction and operation [1972, eng] **G-20304**
U.S. Antarctic support study extension: Case 11 [1972, eng] **G-20305**
Examination of radioactivity in the crushed rock from the PM-3A nuclear reactor site, McMurdo, Antarctica [1976, eng] **G-20496**
Public Works Department, *Deep Freeze* 78 [1978, eng] **G-21644**
Respiratory virus transmission at McMurdo Station [1977, eng] **H-19591**

Lack of increased susceptibility to colds at McMurdo [1977, eng] H-19592
Colds and immunity at McMurdo Station and Scott Base [1977, eng] H-19593
Respiratory virus transmission at McMurdo Station and Scott Base [1978, eng] H-21606
Measurements of trace gases and aerosols in the antarctic stratosphere [1977, eng] I-19699
Trace metals in the antarctic atmosphere [1974, eng] I-20224
Synoptic patterns and weather at McMurdo [1977, eng] I-20492
Trends of winter temperature in the Southern Hemisphere [1978, eng] I-21111
Spectroscopic studies at McMurdo, South Pole, and Siple stations [1978, eng] I-21611
Iodine, bromine and chlorine in the antarctic atmosphere [1976, eng] I-21665
Cosmic ray intensity variations [1977, eng] K-19722
Radio scintillation studies [1977, eng] K-19723
Satellite observations of magnetic disturbances in the polar regions [1978, eng] K-20500
Solar-polar coronal holes and the north-south cosmic ray gradient [1978, eng] K-20627
Symmetrical equator-pole anisotropy during an unusual cosmic ray storm [1978, eng] K-20628
Cusp field-aligned currents and the IMF [1978, eng] K-21058
North-south anisotropy of cosmic rays [1975, eng] K-21165
Polar cap auroras analyzed by ionospheric forward scatter data [1977, rus] K-21264

Meserve Glacier
Investigation of creep instability as a mechanism for glacier surges [1978, eng] F-21203
Internal heating and surges of nontemperate glaciers [1978, rus] F-21204

Miers Valley
"Complete" seal carcass at Lake Miers, Miers Valley [1977, eng] B-19599

Mirnyy Station
U.S.S.R. national report to SCAR, No.19 [1977, eng] A-19568
U.S.S.R. national report to SCAR, No.20 [1978, eng] A-21064
Seasonal plankton variations [1975, eng] B-20672
Melting and disintegration of shore ice in the Davis Sea [1968, eng] F-20330
Movement of the ice sheet around Mirnyy Station [1978, rus] F-20743
Results of seismic observations of dynamic glacier processes at Mirnyy [1978, rus] F-20772
Short-wave radiation attenuation by ice and snow [1977, rus] F-21138
American ham operator at Mirnyy [1979, eng] G-21711
Analysis of saliva and the oral cavity [1977, rus] H-19894
Experimental use of computers for data analysis in medical geographical research [1978, rus] H-20614
Clinical and biochemical studies of acclimatization [1978, rus] H-21036
Cerebral blood flow adaptation to high-altitude hypoxia in Antarctic workers [1978, rus] H-21038
Motor system dynamics and adaptational features in wintering antarctic personnel [1977, rus] H-21143
Assessing thermoregulation in wintering personnel at a coastal antarctic station [1977, rus] H-21144
Methods and results of studying radiation properties of snow-firn covers [1977, rus] I-20426
Measurements of surface ozone at Mirnyy, Antarctica [1978, ger] I-21290
North-south asymmetry in the intensity of polar cap absorption [1977, eng] K-20079
Intersection of geomagnetic force lines with the interplanetary magnetic field in the evening portion of the south polar cap [1977, rus] K-20170
Geomagnetic bays in Antarctica [1977, rus] K-21136
Cosmic-ray intensity in the near-earth atmosphere and at the surface of the earth [1975, eng] K-21162
Position of the day cusp polar boundary [1976, eng] K-21167
Isolated bursts of type Pc1b geomagnetic pulsations at high latitudes [1978, eng] K-21242
Effect of the total magnetic field of the sun on cosmic-ray modulation in the mid-latitude stratosphere [1978, eng] K-21349
Relationship between ionospheric radiowave absorption and magnetic disturbances in Antarctica [1978, rus] K-21459
Possible classification of photometric records in the polar cap [1978, rus] K-21689
Behavior of the plasma layer during breakup according to Mirnyy Station data [1978, rus] K-21690
On hydrometeorological conditions of microseisms generation [1973, eng] L-19572
Measuring gravity relationship between Mirnyy and Vostok (Antarctica) [1976, ger] L-20686
Electromagnetic anomalies in the Mirnyy Observatory area [1977, rus] L-21135

Mizuho Plateau
Bedrock topography deduced from radar echoes [1978, eng] E-20084
Mercury profile of Mizuho ice sheet [1977, jap] F-19293
Glaciological studies in Mizuho Plateau, East Antarctica, 1969-1975 [1978, eng] F-19819
Glaciological research program on Mizuho Plateau, 1969-1975 [1978, eng] F-19820
Morphological feature of the ice sheet in Mizuho Plateau [1978, eng] F-19821
Distribution of surface structures of the ice sheet in Mizuho Plateau [1978, eng] F-19822
Distribution of surface features of snow cover in Mizuho Plateau [1978, eng] F-19824
Distribution of 10 m snow temperatures in Mizuho Plateau [1978, eng] F-19825
Distribution of snow accumulation in Mizuho Plateau [1978, eng] F-19831
Stratigraphic studies of the snow cover in Mizuho Plateau [1978, eng] F-19833
Mass input in the Shirase and Soya drainage basins [1978, eng] F-19834
Surface flow and strain of the ice sheet [1978, eng] F-19835
Flow line of the ice sheet over Mizuho Plateau [1978, eng] F-19836
Oxygen isotopic composition of the surface snow in Mizuho Plateau [1978, eng] F-19838
Chemical constituents in the surface snow in Mizuho Plateau [1978, eng] F-19839
Mass budget of the Mizuho Plateau ice sheet [1978, eng] F-19840
Possible causes of ice sheet thinning in the Mizuho Plateau [1978, eng] F-20187
Vertical structure of katabatic winds in Mizuho Plateau [1978, eng] I-19826
Observations of sea-salt particles in the air in Mizuho Plateau [1978, eng] I-19828
Distribution of geomagnetic components, Mizuho Plateau [1977, eng] L-19523
Gravity anomalies and bedrock relief in Mizuho Plateau [1978, eng] L-19823

Mizuho Station
Drifting snow at Mizuho Camp [1977, eng] F-19520
Controlling factors of drifting snow [1978, eng] F-19827
Oxygen isotopic composition of the surface snow in Mizuho Plateau [1978, eng] F-19838
Glaciological survey in 1976-1977 [1978, eng] F-20077
Ice-coring project at Mizuho Station, East Antarctica, 1970-1975 [1978, eng] F-21297
Outline of the drilling operation at Mizuho Station [1978, eng] F-21298
Stratigraphic analyses of firn and ice at Mizuho Station [1978, eng] F-21299
Firn and ice core structure at Mizuho Station [1978, eng] F-21300
Permeability and elasticity of snow and firn at Mizuho Station [1978, eng] F-21301
Electrical behaviors of antarctic ice drilled at Mizuho Station, East Antarctica [1978, eng] F-21302
Stress-strain tests of an ice core from Mizuho Station [1978, eng] F-21303
Internal friction of antarctic Mizuho ice cores at low frequency [1978, eng] F-21304
Anisotropy of ultrasonic wave velocities in Mizuho cores [1978, eng] F-21305
Extinction coefficient of light in Mizuho ice cores [1978, eng] F-21306
Compiled stratigraphic data from cores drilled at Mizuho Station [1978, eng] F-21307
Compiled density data from cores drilled at Mizuho Station [1978, eng] F-21308
Petrographic data from cores drilled at Mizuho Station [1978, eng] F-21309

Mizuho Station *(cont.)*
Oxygen isotopic composition in the cores from Mizuho Station [1978, eng] **F-21310**
Chemistry of ice cores from Mizuho Station [1978, eng] **F-21311**
Meteorological data at Mizuho Camp, Antarctica in 1976-1977 [1977, eng] **I-19360**
Seasonal variations of meteorological elements at Mizuho Plateau [1978, eng] **I-19829**
Vapor pressure and sublimation in Antarctica [1978, eng] **I-20082**
Meteorological data at Mizuho Station, Antarctica in 1977-1978 [1978, eng] **I-20999**
Riometer records of 30 MHz cosmic noise at Syowa Station Antarctica in 1976 [1977, eng] **K-19361**
Wave characteristics of magnetic Pi2 pulsations in the auroral region [1978, eng] **K-20958**

Molodezhnaya Station
U.S.S.R. national report to SCAR, No.19 [1977, eng] **A-19568**
Automatic data processing at Molodezhnaya [1977, rus] **A-19890**
U.S.S.R. national report to SCAR, No.20 [1978, eng] **A-21064**
Summer respiration of an antarctic amphipod [1973, eng] **B-20218**
Chemical composition of *Paramoera walkeri* [1974, eng] **B-20219**
Seasonal plankton variations [1975, eng] **B-20672**
Studies of barometric leveling in Antarctica [1975, ger] **C-19505**
Geodetic work in Alasheyev Bight [1968, eng] **C-20341**
Investigation of a subglacial lake near Molodezhnaya Station [1977, rus] **E-19796**
Precambrian basement at Molodezhnaya Station, East Antarctica [1978, eng] **E-20181**
Studies of antarctic glacier structure [1978, rus] **F-20745**
Snow accumulation around Molodezhnaya Station [1978, rus] **F-20765**
Long-distance propagation of time signals [1977, rus] **G-19893**
Site selection for Molodezhnaya Station [1968, eng] **G-20334**
Organization of the new Soviet station Molodezhnaya [1968, eng] **G-20343**
Variations in frequency spectra on EEG's of antarctic workers [1978, rus] **H-20730**
Temperature and wind velocity variations in the winter polar mesosphere [1974, eng] **I-20135**
Results of meteorological observations [1968, eng] **I-20342**
Methods and results of the gradient and micropulsation measurements of air temperature and wind velocity [1977, rus] **I-20427**
Global transport rate for radioactive products and behavior of Cesium-137 in the antarctic atmosphere in 1969-70 [1977, rus] **I-20695**
Katabatic wind in the Molodezhnaya Station area and forecasting it [1978, rus] **I-20764**
State of the art and future prospects for antarctic meteorological research [1978, rus] **I-21691**
Seventh voyage of the R/V *Ob'* [1968, eng] **J-20327**
Activities of the *Ob',* 1961-62 [1968, eng] **J-20328**
Tidal observations in the region of Molodezhnaya Station [1968, eng] **J-20335**
Hydrographic investigations of approaches to the Antarctic station Molodezhnaya [1968, eng] **J-20338**
Thermal structure of antarctic continental slope waters around Molodezhnaya Station [1978, rus] **J-20649**
Vertical ionospheric soundings at Molodezhnaya Station [1977, rus] **K-19889**
North-south asymmetry in the intensity of polar cap absorption [1977, eng] **K-20079**
Initial results of rocket studies of charged particle streams in Antarctica [1978, rus] **K-20766**
Preliminary results of oblique-incidence sounding of the ionosphere on a Moscow-Antarctica path [1978, rus] **K-20767**
Preliminary results of studies of multi-trajectory signals on the Moscow-Molodezhnaya path [1978, rus] **K-20768**
Auroral absorption at Molodezhnaya Station in 1973 [1978, rus] **K-20769**
Results of field intensity measurements of short-wave exact time radio stations at Molodezhnaya [1978, rus] **K-20771**
VLF signal observations at Molodezhnaya Station [1978, rus] **K-20773**
Geomagnetic bays in Antarctica [1977, rus] **K-21136**
Determining an astronomical reference point at Molodezhnaya Station, Antarctica [1978, rus] **K-21378**
Relationship between ionospheric radiowave absorption and magnetic disturbances in Antarctica [1978, rus] **K-21459**

Morning, Mount
Volcanic geology of the lower slopes of Mt. Morning [1978, eng] **E-21523**

Mount Erebus
Volcanic and seismic activity at Mount Erebus, Antarctica [1976, jap] **E-19278**

Mount Flora
Stratigraphic relations between Argentina and Antarctica [1975, spa] **E-19860**

Mount Fukushima
Antarctic geological map series. Sheet 17—Northern Yamato Mountains (1) Mt. Fukushima [1978, eng] **E-20302**

Mount Hope
Anatectic origin of late orogenic granitic intrusions of the Hope and Ida groups in the Beardmore Glacier area, Antarctica [1972, rus] **E-20134**

Mount Ida
Anatectic origin of late orogenic granitic intrusions of the Hope and Ida groups in the Beardmore Glacier area, Antarctica [1972, rus] **E-20134**

New Mountain
Geology of New Mountain sandstone, South Victoria Land [1974, eng] **E-21495**

Norway Station
Surface temperature and sea-level pressure at Norway Station and Sanae [1976, eng] **I-19901**

Novolazarevskaya Station
U.S.S.R. national report to SCAR, No.19 [1977, eng] **A-19568**
U.S.S.R. national report to SCAR, No.20 [1978, eng] **A-21064**
Conditions for ship unloading near Novolazarevskaya Station [1977, rus] **G-19887**

O'Higgins Station
Wind chill index as applied to three Chilean antarctic bases [1972, spa] **I-19794**

Ongul Island
First landing at Ongul Island [1978, jap] **A-20433**
Plant distribution on W. Ongul and Teöya Islands [1977, jap] **B-19299**
Population density of free-living mites in ice-free areas [1977, eng] **B-19524**
Two new fossil demosponges from West Ongul Island, Lützow-Holm Bay, Antarctica [1977, eng] **B-20239**
Soil chemistry of E. Ongul Island [1977, jap] **E-19295**
Diatom flora and environmental factors in some freshwater ponds of East Ongul Island [1977, jap] **E-19296**
Interpretation of levelings and radiocarbon dating of Showa beaches [1977, eng] **E-20226**

Orville Coast
Geologic studies in Orville Coast and eastern Ellsworth Land, Antarctic Peninsula [1978, eng] **E-21501**
Stratigraphical studies in Orville Coast and eastern Ellsworth Land [1978, eng] **E-21502**

Palmer Station
Reproductive biology of the brooding antarctic lamellibranch *Kidderia subquadratum* Pelseneer [1974, eng] **B-19284**
Winter observations of birds at Palmer Station in 1977 [1978, eng] **B-21588**
Impact of unfavorable ice conditions on bird productivity [1978, eng] **B-21589**
Radar and satellite communications system at Palmer Station [1978, eng] **G-19757**
Air-sea interaction studies using an X-band radar at Palmer Station [1977, eng] **I-19707**
Satellite link between Palmer Station and Nevada [1977, eng] **K-19728**

Pensacola Mountains
Geological comparison of the Shackleton Range and the Pensacola Mountains [1977, eng] **E-19649**
Geological studies of the Dufek intrusion, Pensacola Mountains, 1976-1977 [1977, eng] **E-19650**

Runway site survey, Pensacola Mountains, Antarctica [1977, eng] G-19368
Geophysical studies of the Dufek intrusion, Pensacola Mountains, Antarctica, 1976-1977 [1977, eng] L-19651

Pionerskaya Station
Glaciological investigations along the Mirny-Pionerskaya-Dome C profile [1978, rus] F-21389

Plateau Station
On the origin of mineral impurities in ice [1977, fre] F-20112
On the origins of mineral impurities in ice (Transl.) [1979, eng] F-21262
Radiation budget at Plateau Station, Antarctica, 1966-1967 [1977, eng] I-19337
Air temperature and two-dimensional wind profiles in the lowest 32 meters as a function of bulk stability [1977, eng] I-20934
Stability-related wind spiraling in the lowest 32 meters [1977, eng] I-20935
Variations of temperature and air motion in the 0- to 32-meter layer at Plateau Station, Antarctica [1977, eng] I-20936
Light transmission and its modification by the inversion and general circulation of the antarctic atmosphere [1973, eng] I-21493

Possession Island
Preliminary note on the Gentoo penguin of Possession Island [1972, fre] B-20895
Internal temperature of the Gentoo penguin [1972, fre] B-20896

Prat Station
Wind chill index as applied to three Chilean antarctic bases [1972, spa] I-19794

Prince Charles Mountains
Petrographic character of moraine deposits in Prince Charles Mountains (Mac.Robertson Land) [1978, rus] E-20720

Prince Edward Island
Littoral ecology of Marion and Prince Edward Islands (Southern Ocean) [1976, eng] B-20835

Prince Edward Islands
South African participation in cruise MD08 of *Marion Dufresne* [1976, eng] B-19902
Lichens of Marion and Prince Edward Islands, southern Indian Ocean [1976, eng] B-20097

Prince Olaf Coast
Interpretation of levelings and radiocarbon dating of Showa beaches [1977, eng] E-20226

Proclamation Island
Sunshine on Proclamation [1978, eng] M-21653

Prydz Bay
Features of the oceanographic regime in Prydz Bay (Feb. 1973) [1978, rus] J-20740

Queen Alexandra Range
An unusual osmundaceous specimen from Antarctica [1978, eng] B-21396
Stratigraphy and sediments of rocks in the Queen Maud Range area [1968, eng] E-19462
Trace element chemistry of the Kirkpatrick basalt, Storm Peak, Central Transantarctic Mountains [1974, eng] E-21483

Queen Elizabeth Range
Stratigraphy and sediments of rocks in the Queen Maud Range area [1968, eng] E-19462

Queen Fabiola Mountains
Proceedings of the second Symposium on Yamato Meteorites [1978, eng] E-19916
Yamato-74 meteorites [1978, eng] E-19917
Collection of Yamato meteorites, 1975-76 [1978, eng] E-19918
Possible mechanism of concentration of meteorites in Antarctica [1978, eng] E-19920
Study on the extraterrestrial materials in Antarctica (VIII) [1978, eng] E-19922
Classification for the Yamato-74 chondrites [1978, eng] E-19923
Mineralogical and petrographical studies of the Yamato meteorites, Yamato-7301(j), -7305(k), -7308(l) and -7303(m) from Antarctica [1978, eng] E-19924
Petrological studies of Yamato-74 meteorites (1) [1978, eng] E-19925
Petrological studies of Yamato-74 meteorites (2) [1978, eng] E-19926
Preliminary mineralogical examination of the Yamato-74 achondrites [1978, eng] E-19927
Yamato achondrite polymict breccias [1978, eng] E-19928
Rare gas studies of Yamato-7301(j), -7304(m) and -7305(k) [1978, eng] E-19929
Cosmic ray induced Mn-53 in Yamato-7301(j), -7305(k) and -7304(m) meteorites [1978, eng] E-19930
Oxygen isotopes in several Yamato meteorites [1978, eng] E-19931
K-Ar age of Yamato meteorite, Yamato-74190-01(L) [1978, eng] E-19932
REE, Ba, Sr and Rb in the Yamato meteorites [1978, eng] E-19933
Magnetic properties of an iron meteorite and a pallasite [1978, eng] E-19935
Metallographic properties of Yamato iron meteorite and stony-iron meteorite [1978, eng] E-19936
Note on new antarctic iron meteorites [1978, eng] E-19937
Yamat-74662 meteorite: a carbonaceous chondrite Type II [1978, eng] E-19938
Yamato meteorites sampling [1975, jap] E-20048
Antarctic geological map series. Sheet 17—Northern Yamato Mountains (1) Mt. Fukushima [1978, eng] E-20302
Strain grid for measuring glacier movement [1977, eng] F-19527
Topographic features of the ice sheet around the Yamato Mountains [1978, eng] F-19921
Atmospheric surface layer over bare ice in the Yamato Mountains [1978, jap] F-20083

Queen Maud Land
Snow petrel colonies in Queen Maud Land [1977, eng] B-19777
Filtering effect of snow [1977, eng] F-20120

Queen Maud Mountains
Geology of Shackleton Glacier area, Queen Maud Range, Transantarctic Mountains, Antarctica [1969, eng] E-19287
Geology of Queen Maud Mountains and Marie Byrd Land [1977, eng] E-19647
New Triassic vertebrates from the Fremouw Formation [1978, eng] E-21514

Renegar Glacier
Geology of the region between the Renegar and Blue Glaciers [1978, eng] E-20320

Ross Ice Shelf
Ross Ice Shelf Project environmental impact statement July, 1974 [1978, eng] B-19979
Life below the Ross Ice Shelf, Antarctica [1979, eng] B-21101
Fish, crustaceans, and the sea floor under the Ross Ice Shelf [1979, eng] B-21102
Occurrence and metabolic activity of organisms under the Ross Ice Shelf, Antarctica, at Station J9 [1979, eng] B-21103
Microbial life beneath the Ross Ice Shelf [1978, eng] B-21578
Benthic marine biology, Ross Ice Shelf Project [1978, eng] B-21585
New Zealand topographic survey in Ross Dependency [1963, eng] C-19279
Miocene glaciomarine sediments from beneath the southern Ross Ice Shelf, Antarctica [1979, eng] E-21095
Ross sea region in the Middle Miocene: a glimpse into the past [1979, eng] E-21096
Regional distribution of Sr-87/Sr-86 ratios and mixing of sediments in the Ross Sea, Antarctica [1974, eng] E-21484
Miocene diatom flora from bottom cores at RISP site J-9 [1978, eng] E-21574
Sediments and life under the Ross Ice Shelf (J-P), Antarctica [1978, eng] E-21586
Ross Ice Shelf Project, 1976-1977 [1977, eng] F-19685
Glaciological measurements on the Ross Ice Shelf [1977, eng] F-19687
Geochemical and isotope studies, Ross Ice Shelf Project [1977, eng] F-19688
Ultrasonic measurements on ice cores from Ross Ice Shelf [1977, eng] F-19690
Ross Ice Shelf Project drilling, October-December 1976 [1977, eng] F-19691
Polar ice core analysis [1977, eng] F-19692
Precipitation-forming mechanisms [1977, eng] F-20113

Ross Ice Shelf *(cont.)*
Less surface accumulation on the Ross Ice Shelf than hitherto assumed [1977, eng] **F-20119**
Stable isotope profile through the Ross Ice Shelf at Little America V, Antarctica [1977, eng] **F-20125**
Snow chemistry and atmospheric processes on the Ross Ice Shelf [1978, eng] **F-20393**
Ross Ice Shelf Project [1979, eng] **F-21094**
Equilibrium state of the eastern half of the Ross Ice Shelf [1978, eng] **F-21336**
Ross Ice Shelf Project 1977-78 [1978, eng] **F-21535**
Access hole drilling through the Ross Ice Shelf [1978, eng] **F-21536**
Glaciological measurements on the Ross Ice Shelf [1978, eng] **F-21537**
Ross Ice Shelf Geophysical survey, 1977-1978 [1978, eng] **F-21538**
Role of precipitation processes in chemistry of polar snows [1976, eng] **F-21672**
Atmosphere's role in chemical composition of Ross Ice Shelf snow [1977, eng] **I-19697**
Synoptic patterns and weather at McMurdo [1977, eng] **I-20492**
Ross Ice Shelf Project: physical oceanography [1977, eng] **J-19621**
Oceanographic data from McMurdo Sound [1977, eng] **J-19622**
Ross Ice Shelf sea temperature [1979, eng] **J-21097**
Circulation and melting beneath the Ross Ice Shelf [1979, eng] **J-21098**
Ocean tide and waves beneath the Ross Ice Shelf, Antarctica [1979, eng] **J-21099**
Tritium and carbon-14 in seawater under the Ross Ice Shelf [1979, eng] **J-21100**
Temperature and salinity fields under the Ross Ice Shelf [1978, eng] **J-21551**
Physical oceanography of the Ross Sea [1978, eng] **J-21553**
Ocean wave measurements at the RISP J-9 camp [1978, eng] **J-21557**

Ross Island
Capturing and immobilizing McCormick skuas [1969, eng] **B-19413**
Respiratory adaptation and energy metabolism in antarctic notothenиid fishes [1978, eng] **B-21403**
Minerals in Cenozoic rocks of Ross Island [1978, eng] **E-20363**
Trace elements in volcanic rocks of Ross Island and vicinity [1978, eng] **E-20365**
Significance of gamma-ray, salinity and electrical logs in DVDP boreholes [1978, eng] **E-20371**
Genesis of volcanic rocks of Ross Island [1978, eng] **E-20373**
Correlation of clinopyroxene composition with environment of formation [1978, eng] **E-20375**
Peridot on Ross Island—Antarctica [1974, eng] **E-20593**
Mineralogy of ejecta from Mt. Erebus [1977, eng] **E-20758**

Ross Sea
Ross Sea [1973, eng] **A-20060**
Viviparous echinoderms from the South Atlantic [1965, spa] **B-19412**
Ecosystem modeling for the southern ocean [1977, eng] **B-19615**
Microbial investigations in the Ross Sea [1978, eng] **B-21579**
Biogeography and metabolism of Ross Sea plankton [1978, eng] **B-21580**
Campbell Plateau and its relationship with the Ross Sea [1977, eng] **E-19258**
Strontium isotopic study of sediment from the Ross Sea [1977, eng] **E-19640**
Sediments and sediment processes on high latitude continental shelves [1977, eng] **E-19868**
Last glaciation of the Ross Sea, Antarctica [1977, rus] **E-20156**
Use of strontium isotopes to study mixing of sediment derived from different sources: the Ross Sea, Antarctica [1978, eng] **E-20513**
Volcanogenic sediment in the Ross Sea [1977, eng] **E-20753**
Major element geochemistry of Ross Sea sediments [1978, eng] **E-20879**
Ross sea region in the Middle Miocene: a glimpse into the past [1979, eng] **E-21096**
Late Quaternary paleogeology and paleoclimatology [1978, eng] **E-21575**
Piston coring aboard USCGC *Glacier* in the Ross Sea [1978, eng] **E-21576**
Report of the Antarctic Ice Observing and Forecasting Program—1964 [1966, eng] **F-19946**
Report of the Antarctic Ice Observing and Forecasting Program—1965 [1967, eng] **F-19947**
Report of the Antarctic Ice Observing and Forecasting Program—1966 [1967, eng] **F-19948**
Margin of continuous glaciation of Western Antarctica in the Ross Sea during the last glaciation maximum [1977, rus] **F-20173**
Atmospheric trace gases in the southern hemisphere [1973, eng] **I-19484**
Solar radiation over the Weddell and Ross Seas [1978, eng] **I-21608**
Ross Ice Shelf Project: physical oceanography [1977, eng] **J-19621**
Provisional cotidal charts for the southern Ross Sea [1977, eng] **J-19623**
Oceanographic data from the Nemo Ross Sea Expedition, 1972 [1974, eng] **J-20523**
Carbon isotope composition in the marine environment [1978, eng] **J-20579**
Ocean tide and waves beneath the Ross Ice Shelf, Antarctica [1979, eng] **J-21099**
Physical oceanography of the Ross Sea [1978, eng] **J-21553**
Spatial variation of Ross Sea tidal constituents [1978, eng] **J-21556**

Royds, Cape
Weddell seal population dynamics Scott Base to Cape Royds [1978, eng] **B-20316**
Summary of the annual Adelie penguin census at Cape Royds [1978, eng] **B-20317**

Rupper Coast
Geologic survey of Ruppert-Hobbs Coasts sector, Marie Byrd Land [1978, eng] **E-21499**

Ruppert Coast
Geology of Marie Byrd Land and Eights Coast [1976, rus] **E-19277**
Plutonic rocks from the Ruppert Coast, West Antarctica [1978, eng] **E-21500**

Ryugu, Cape
Field surveys on Cape Ryugu, East Antarctica in 1977-1978 [1978, jap] **A-20829**

Saint Paul Island
Studies of terrestrial microarthropods on Amsterdam and St. Paul Islands. 1. Amsterdam Island: preliminary quantitative study [1973, fre] **B-19308**
Production of lobsters in the waters of Saint Paul and Amsterdam Islands [1977, eng] **B-20044**

SANAE Station
News from the islands, Antarctica and SANAE [1977, eng] **A-19485**
Surface temperature and sea-level pressure at Norway Station and Sanae [1976, eng] **I-19901**
Climate data for Norway Station and SANAE in the Antarctic for the years 1960 to 1965 [1965, eng] **I-20424**
Trends of winter temperature in the Southern Hemisphere [1978, eng] **I-21111**
Aurorae and closed magnetic field lines [1977, eng] **K-19804**
Monthly bulletin of ionospheric characteristics observed at SANAE Base, Antarctica [1967, eng] **K-20225**
Geomagnetic L-variation at SANAE, Antarctica [1978, eng] **L-21342**

Saratoga Table
Geology of the Saratoga Table quadrangle, Pensacola Mountains, Antarctica [1978, eng] **E-21257**

Saunders Coast
Geology of Marie Byrd Land and Eights Coast [1976, rus] **E-19277**

Schirmacher Ponds
Characteristics of tidal phenomena in bays in the Schirmacher Ponds [1978, rus] **J-20721**

Scotia Sea
Foraminifera and radiolaria in sediments of the Scotia and Weddell Seas [1967, eng] **B-19519**
Euphausiid distribution and reproduction in the Scotia Sea [1978, eng] **B-20139**
Behaviour of krill in photic and electrical fields [1970, eng] **B-20383**
Observations on krill in a zone of artificial illumination [1970, eng] **B-20385**
Observations of krill on a Russian vessel [1970, eng] **B-20386**
Effect of hydrological conditions in the Scotia Sea on aggregations of baleen whales [1973, rus] **B-20584**
Fecundity of Scotia Sea fish [1973, eng] **B-20822**
Larval krill *(Euphausia superba)* in the plankton and neuston samples of the German Antarctic Expedition 1975-76 [1978, eng] **B-21344**

Species composition and zoogeographic analysis of bottom fish fauna in the Scotia Sea [1977, rus] **B-21433**
Micronekton and zooplankton [1978, ger] **B-21446**
History of sediment lithofacies in the South Atlantic Ocean [1977, eng] **E-19852**
Tectonic framework of Cenozoic volcanism in the Scotia Sea region—a review [1976, eng] **E-20147**
Genesis of island arcs [1977, eng] **E-20602**
Inter-arc basins: a kinematic model [1978, eng] **E-20622**
Water budget of Drake Passage and Scotia Sea basin [1977, eng] **J-19373**
Amino acids dissolved in sea water as one of the indicators of the physiologic state of an ecosystem [1978, eng] **J-20932**
Isohaline thermoclines in the southeast Pacific Ocean [1978, eng] **J-21131**
Temperature and profiling current meter measurements in the central Scotia Sea [1978, eng] **J-21343**
Oceanographic studies in relation to krill fisheries [1978, ger] **J-21445**
Polar Front zone in the western Scotia Sea, winter 1977 [1978, eng] **J-21547**
Regional gravity anomalies in the Atlantic Ocean [1978, rus] **L-19498**

Scott Glacier
Geology of the Scott Glacier and Wisconsin Range area [1967, eng] **E-19398**

Scott Station
Physiological adaptation in antarctic fishes [1978, eng] **B-20314**
Weddell seal population dynamics Scott Base to Cape Royds [1978, eng] **B-20316**
Waste disposal at Scott Station [1977, eng] **G-19359**
Colds and immunity at McMurdo Station and Scott Base [1977, eng] **H-19593**
Electroencephalography, isolation and hypnotic capability at Scott Base [1978, eng] **H-20877**
Respiratory virus transmission at McMurdo Station and Scott Base [1978, eng] **H-21606**

Seymour Island
Struthiolaridae (Gastropoda) fauna from Seymour Island, Antarctic Peninsula [1976, eng] **B-20397**
Biostratigraphy of Seymour Island, Antarctica [1978, eng] **E-19939**
Three new species of *Pulvinites* [1978, eng] **E-20547**
Eocene nautiloid fauna from La Meseta Formation, Seymour Island [1978, eng] **E-21515**
A.P.T. Station Marambio: receiver of weather satellite pictures [1975, spa] **I-20253**

Shackleton Range
Geological comparison of the Shackleton Range and the Pensacola Mountains [1977, eng] **E-19649**
Discovery of first Middle Cambrian trilobites in the Shackleton Range [1978, rus] **E-21701**

Shirase Glacier
Discharge of ice across the Sôya Coast [1978, eng] **F-19837**

Showa Sation
Report of the wintering party of JARE-16 [1978, jap] **A-20828**

Showa Station
Visit to Antarctica [1976, jap] **A-19428**
Abortive attempt at wintering [1978, jap] **A-20434**
Plant communities near Showa related to water supply and soil [1977, jap] **B-19297**
Moss and lichen communities near Showa [1977, jap] **B-19298**
Distribution of anaerobic bacteria [1977, jap] **B-19302**
Mites around Showa [1977, jap] **B-19305**
Seasonal changes in sea ice algae near Showa Station [1977, eng] **B-20037**
First wintering party of the JARE [1978, jap] **D-19768**
Meltwater near Showa Station [1977, eng] **F-19522**
Accumulation and ablation at Syowa Station [1978, eng] **F-19830**
Oxygen isotopic composition of the surface snow in Mizuho Plateau [1978, eng] **F-19838**
Factors controlling oxygen isotopic composition of fallen snow in Antarctica [1978, eng] **F-19880**
Physical properties of sea ice near Showa Station [1977, jap] **F-20047**
Glaciological survey in 1976-1977 [1978, eng] **F-20077**
Flow-visualization by means of soap bubbles on snowdrift around the huts at Syowa Station [1978, jap] **F-20824**
Living conditions during the antarctic winter [1973, jap] **G-19442**
Reopening of Showa Station [1978, jap] **G-19769**
Food supply problems of an early JARE [1978, jap] **G-20432**
Human body burdens of cesium-137 and potassium-40 [1977, jap] **H-19301**
Bacteriological study of pollution [1977, jap] **H-19303**
Particulate arsenic content around Showa [1977, jap] **I-19290**
Sulfur dioxide and fall dust at Showa in summer [1977, jap] **I-19291**
Meteorological observations at Showa, 1974 [1977, eng] **I-19526**
Seasonal variations of meteorological elements at Mizuho Plateau [1978, eng] **I-19829**
Antarctic meteorological data, 1975 [1975, eng] **I-19943**
Antarctic meteorological data, 1976 [1976, eng] **I-19944**
Antarctic meteorological data. Special volume [1978, eng] **I-19945**
Data acquisition from EXOS-A (Kyokkô) at Syowa Station, Antarctica [1978, jap] **I-20827**
Oceanographic data of the 17th JARE 1975-1976 [1977, eng] **J-19528**
Ionospheric data for Showa, Aug. 1961-Jan. 1962 [1969, eng] **K-19384**
Ionospheric data for Showa, July-Dec. 1971 [1972, eng] **K-19385**
Ionospheric data for Showa, July-Dec. 1972 [1973, eng] **K-19386**
Ionospheric data for Showa, July-Dec. 1973 [1974, eng] **K-19387**
Ionospheric data for Showa, Jan.-June 1974 [1975, eng] **K-19388**
Ionospheric data for Showa, Jan.-June 1975 [1976, eng] **K-19389**
Ionospheric data for Showa, Feb.-July 1966 [1969, eng] **K-19392**
Ionospheric data for Showa, Aug. 1960-Jan. 1961 [1968, eng] **K-19961**
Ionospheric data for Showa, Aug. 1967-Jan. 1968 [1971, eng] **K-19962**
Ionospheric data for Showa, Aug. 1968-Jan. 1969 [1970, eng] **K-19963**
Ionospheric data for Showa, Feb.-July 1969 [1969, eng] **K-19964**
Ionospheric data for Showa, Aug. 1969-Jan. 1970 [1970, eng] **K-19965**
Ionospheric data for Showa, Feb. 1970-Jan. 1971 [1972, eng] **K-19966**
Ionospheric data for Showa, Jan.-June 1971 [1972, eng] **K-19967**
Ionospheric data for Showa, Jan.-June 1973 [1973, eng] **K-19968**
Ionospheric data for Showa, July-Dec. 1974 [1975, eng] **K-19969**
Ionospheric data for Showa, July-Dec. 1975 [1976, eng] **K-19970**
Ionospheric data for Showa, Jan.-June 1976 [1976, eng] **K-19971**
Auroral deformation and anomalous viscosity [1978, eng] **K-20063**
Records of radio aurora at Syowa Station, Antarctica in 1976 [1978, eng] **K-20091**
Drift of auroral radar echoes [1978, eng] **K-20183**
Records of all-sky camera photographs Syowa Station, Antarctica in 1976 [1978, eng] **K-20516**
Proceedings of the Second Symposium on Rocket Experiments in Antarctica [1978, eng] **K-20947**
Rocket measurements of electron density and temperature profiles [1978, eng] **K-20948**
Auroral-zone energetic electrons at Showa Station [1978, eng] **K-20949**
Precipitating electrons observed by sounding rockets [1978, eng] **K-20950**
Rocket observation of keV electron fluxes at Syowa Station [1978, eng] **K-20951**
Modified electron spectrometer for medium energy [1978, eng] **K-20952**
Rocket observation of VLF emission spectra [1978, eng] **K-20953**
Rocket observations of wave phenomena in the ionosphere [1978, eng] **K-20954**
Observing plan of wave normal direction of auroral VLF emissions [1978, eng] **K-20955**
Attitudes of the antarctic sounding rocket vehicles [1978, eng] **K-20956**
Wave characteristics of magnetic Pi2 pulsations in the auroral region [1978, eng] **K-20958**
Cosmic noise records at Showa Station, 1977 [1978, eng] **K-20998**
Measurements of electric field and auroral X-rays with antarctic balloons [1979, jap] **K-21682**
Magnetic field observations with sounding rockets [1979, jap] **K-21683**
Seismological bulletin of Syowa Station, Antarctica, 1976 [1978, eng] **L-20092**

Signy Island
Trematoda: Notocotylidae from the Sheathbill [1969, eng] **B-19339**
Trematode parasites of the Sheathbill [1968, eng] **B-19340**
Nematode and acanthocephalan parasites of the Sheathbill [1969, eng] **B-19342**
Antarctic marine secondary production and the phenomenon of cold adaptation [1977, eng] **B-19473**
Development of moss-peat banks in relation to changing climate and ice cover on Signy Island in the maritime Antarctic [1976, eng] **B-19552**
Tardigrada and Rotifera of Signy Island [1976, eng] **B-19555**
Bryophyte species on Signy Island [1976, eng] **B-19562**

Signy Island *(cont.)*
Oxygen uptake of an antarctic arthropod [1977, eng] **B-20160**
Terrestrial ecosystems in the Antarctic [1977, eng] **B-20273**
Southern giant petrels in Australian waters [1974, eng] **B-20357**
Antarctic freshwater rotifers [1977, eng] **B-20785**
Animals of the antarctic islands [1973, eng] **B-20906**
Biology of an antarctic aquatic moss community [1978, eng] **B-21289**
New species of marine isopod of the genus *Antarcturus* (Isopoda, Valvifera) from the South Orkney Islands [1979, eng] **B-21371**
Springtails from Signy Island [1978, eng] **B-21402**
Unusual drainage system in an antarctic valley [1976, eng] **E-19551**
Climatic charts for BAS stations, 1971 [1976, eng] **I-19557**
Climatic charts for BAS stations, 1972 [1976, eng] **I-19558**

Siple Station
1974 visit to the new South Pole Station [1976, jap] **A-19426**
Spectroscopic studies at McMurdo, South Pole, and Siple stations [1978, eng] **I-21611**
Doppler shifts on whistler mode signals received at Siple Station, Antarctica [1977, eng] **K-19422**
Experiment communication and data transmission through the ATS-3 synchronous satellite [1977, eng] **K-19710**
Siple/Roberval VLF transmitting experiments [1977, eng] **K-19711**
Electron precipitation associated with very low frequency chorus and thunderstorm electric fields [1977, eng] **K-19712**
Dual coherent auroral radar observations from Siple Station, Antarctica [1977, eng] **K-19713**
Polarization studies of Siple-Roberval Pc 1 micropulsations [1977, eng] **K-19714**
Magnetic fluctuations and ionosphere conductivity changes measured at Siple Station [1977, eng] **K-19715**
High-latitude ionospheric absorption [1977, eng] **K-19719**
Whistler precursors: a possible catalytic role of power line radiation [1977, eng] **K-19911**
Active very low frequency experiments on the magnetosphere from Siple Station, Antarctica [1977, eng] **K-20281**
Upper atmosphere research in Antarctica [1978, eng] **K-20291**
Very low frequency radio waves in the magnetosphere [1978, eng] **K-20294**
Controlled wave-particle interaction experiments [1978, eng] **K-20295**
Dynamo origin of electric fields in the plasmasphere [1978, eng] **K-20501**
Direction finder for whistler mode signals [1978, eng] **K-20502**
Whistlers and VLF noises propagating just outside the plasmapause [1978, eng] **K-20503**
Magnetospheric radiation from power lines [1975, eng] **K-20507**
ULF and ionospheric conductivity variations during substorms [1978, eng] **K-20531**
Transmitter simulation of power line radiation effects in the magnetosphere [1978, eng] **K-20997**
Whistler observations of substorm electric fields in the nightside plasmasphere [1978, eng] **K-21059**
High time resolution riometer studies of magnetospheric electron precipitation [1978, eng] **K-21623**
Precipitating electrons observed from balloons [1978, eng] **K-21624**
Correlative Pc 1 micropulsations and particle precipitation [1978, eng] **K-21625**
Siple/Roberval magnetospheric wave-wave interaction experiments [1978, eng] **K-21626**
ISEE-1 satellite observations of signals from the Siple transmitter [1978, eng] **K-21627**
Wave-induced particle precipitation effects at Siple Station [1978, eng] **K-21628**
Power line radiation in the magnetosphere [1978, eng] **K-21629**
Jupiter: a new tool for magnetospheric research [1978, eng] **K-21630**

Skallen Hills
Interpretation of levelings and radiocarbon dating of Showa beaches [1977, eng] **E-20226**

Skarvsnes Foreland
Saline lake algae in Antarctica [1978, jap] **B-20436**
Plankton and bottom deposits in a Skarvnes Foreland lake [1975, jap] **E-19585**
Interpretation of levelings and radiocarbon dating of Showa beaches [1977, eng] **E-20226**

Snares Islands
Birds of the Western Chain Snares Islands, New Zealand [1977, eng] **B-19451**
Birds of the 1976-77 Snares Islands expedition [1977, eng] **B-19907**
Breeding of antarctic terns at the Snares Islands, New Zealand [1978, eng] **B-20237**
Leopard seals at the Snares Islands, New Zealand [1978, eng] **B-20527**

South Atlantic Ocean
First krill expedition of the Federal Republic of Germany to antarctic waters [1975, ger] **A-20942**
Fish resources in the South Atlantic Ocean [1976, ger] **A-20966**
Krill catch in the Atlantic sector of the Antarctic [1977, ger] **A-20968**
New species of shrimp, *Pasiphaea grandicula,* and a short outline of species of the genus [1976, rus] **B-19574**
Abyssal benthonic foraminifera [1978, eng] **B-20538**
Distribution of displaced antarctic diatoms in the Argentine Basin [1978, eng] **B-20843**
Diurnal migration of antarctic krill [1976, ger] **B-20965**
Estimation of antarctic krill in the Atlantic [1977, ger] **B-20975**
Research and exploration of the resources of krill and food fish in the Antarctic. Report on the 1975/76 Antarctic Expedition of the Federal Republic of Germany [1977, ger] **B-21118**
New species of trematode parasites in fish of the Falkland-Patagonian region, southwest Atlantic Ocean [1977, rus] **B-21375**
New species of copepods of the genus *Calocalanus* from the Indian sector of the Antarctic and the South Atlantic [1978, eng] **B-21401**
Morphology and description a crustacean genus [1978, rus] **B-21440**
Antarctic Expedition 1975-1976 of the Federal Republic of Germany [1978, ger] **B-21443**
Authigenous silicon in the mixed plankton from the Atlantic province of the Antarctic [1978, eng] **B-21478**
New Gonostomatid fish from the South Atlantic Ocean [1972, eng] **B-21489**
Course of the Antarctic Expedition of the Federal Republic of Germany [1978, ger] **D-21444**
Cretaceous *Islas Orcadas* core from the Falkland Plateau [1977, eng] **E-19635**
Basal sediment ages of *Islas Orcadas* cruise 7 piston cores [1977, eng] **E-19637**
Zeolites in South Atlantic deep-sea sediments [1977, eng] **E-19848**
Geochemistry of sediments in the western central Atlantic, DSDP Leg 39 [1977, eng] **E-19849**
General synthesis of Central and South Atlantic drilling results, Leg 39, Deep Sea Drilling Project [1977, eng] **E-19851**
History of sediment lithofacies in the South Atlantic Ocean [1977, eng] **E-19852**
Sediment distribution around the Bouvet triple junction [1978, eng] **E-20358**
Paleontology and paleoenvironment of the Southwest Atlantic Ocean Basin [1978, eng] **E-21564**
Planktonic foraminiferal dissolution [1978, eng] **E-21565**
New Gonostomatid from the South Atlantic Ocean [1973, ger] **F-21490**
Seasonal variation of incident solar radiation over the South Atlantic Ocean [1977, eng] **I-19709**
Depositional history of the South Atlantic Ocean [1977, eng] **J-19321**
Structure of large-scale circulation of Atlantic Ocean waters [1977, eng] **J-19741**
Antarctic Intermediate water in the intertropical Atlantic [1975, fre] **J-20197**
Silica density of near-bottom Atlantic waters [1974, eng] **J-20519**
Differences between AAIW in the southeast Pacific and the southwest Atlantic [1978, eng] **J-21554**
South Atlantic oceanography [1978, eng] **J-21555**

South Bay
Arthropods of Doumer Island, Antarctic Peninsula [1977, spa] **B-20912**

South Georgia
Scenery of the south: Falkland Islands, South Georgia, Subantarctic islands [1975, eng] **A-19370**
Viviparous echinoderms from the South Atlantic [1965, spa] **B-19412**
Lipid composition of *Chorismus antarcticus* [1977, eng] **B-19471**
Antarctic marine secondary production and the phenomenon of cold adaptation [1977, eng] **B-19473**
Palynological studies in South Georgia: 1. Pollen and spore morphology of the native vascular species [1976, eng] **B-19550**
Influence of reindeer on the vegetation of South Georgia [1976, eng] **B-19560**
Tardigrada from the Antarctic Peninsula and Scotia Ridge region [1976, eng] **B-19561**
Record of *Mytilus edulis* L. from South Georgia [1976, eng] **B-19563**

South Georgian microlichens: 2. A new species of *Microglaena* Körb. [1976, eng] **B-19566**
Diving behavior of fur seals and king penguins [1977, eng] **B-19596**
Oxygen carrying capacity of blood in sea birds [1977, eng] **B-19602**
Ornithological research between Argentina and South Georgia [1977, eng] **B-19603**
New distribution of *Champsocephalus gunnari* Lönnberg (Pisces, Chaenichthyidae) [1970, spa] **B-19738**
Reindeer in the Antarctic [1978, eng] **B-20714**
Redescription of the antarctic opisthobranch *Philine gibba* Strebel, 1908, from the type locality, South Georgia, South Atlantic [1978, eng] **B-21218**
Sperm whales of the southeast Pacific. Part 3. Morphometry [1972, eng] **B-21267**
Shoreline modifications of southeastern South Georgia [1976, eng] **E-19559**
Sedimentologic approach to lithosphere plate restoration [1978, eng] **E-19989**
Major rockfall and debris slide on the Lyell Glacier, South Georgia [1978, eng] **E-20009**
Destruction of the Early Cretaceous marginal basin in the Andes of Tierra del Fuego [1977, eng] **E-21116**
Postglacial pollen diagrams from South Georgia (sub-Antarctic) and West Falkland Island (South Atlantic) [1978, eng] **E-21215**
Climatic charts for BAS stations, 1971 [1976, eng] **I-19557**
Climatic charts for BAS stations, 1972 [1976, eng] **I-19558**
Hydrocarbons in the marine environment. 2. Distribution of *n*-alkanes in the fauna and environment of the subantarctic island of South Georgia [1978, eng] **J-20598**
Seasonal and annual variations in water temperature and salinity near South Georgia, 1925-1937 [1977, eng] **J-20617**
Riometer studies at South Georgia [1976, eng] **K-19546**

South Orkney Islands
Scenery of the south: Falkland Islands, South Georgia, Subantarctic islands [1975, eng] **A-19370**
Classification of cryptogamic communities in the maritime Antarctic [1976, eng] **B-19547**
Tardigrada from the Antarctic Peninsula and Scotia Ridge region [1976, eng] **B-19561**
Feeding of fishes of the families Nototheniidae and Chaenichthyidae in the South Orkney Islands [1978, eng] **B-21400**
Geologic studies in the South Orkney Islands [1977, eng] **E-19655**
Climatic charts for BAS stations, 1971 [1976, eng] **I-19557**
Climatic charts for BAS stations, 1972 [1976, eng] **I-19558**

South Pacific Ocean
Plankton diatoms in the South Pacific Ocean [1968, eng] **B-19251**
Northern records of the Antarctic Petrel *Thalassoica antarctica* in the South Pacific [1977, eng] **B-19747**
Food of Bryde's whales [1977, eng] **B-20093**
Bivalve mollusc *Limatula:* a review [1978, eng] **B-20101**
Taxonomy and distribution of planktonic ostracods [1978, eng] **B-20853**
Northern limits of antarctic krill [1976, spa] **B-21010**
Displaced antarctic diatoms in the southwestern and central Pacific [1976, eng] **B-21060**
Sperm whales of the southeast Pacific. Part 3. Morphometry [1972, eng] **B-21267**
Last-abundant-appearance of a diatom in the Subantarctic [1978, eng] **E-19988**
Geomorphological map of the Indian Ocean and Pacific Ocean antarctic sectors [1978, rus] **E-20807**
Features of summer ice processes in the Pacific sector of Antarctica [1978, rus] **F-20648**
Major features of oceanographic development interpreted from microfossils [1977, eng] **J-19257**
Pacific Ocean bottom water [1976, rus] **J-20229**
Carbon isotope composition in the marine environment [1978, eng] **J-20579**
Isohaline thermoclines in the southeast Pacific Ocean [1978, eng] **J-21131**
Differences between AAIW in the southeast Pacific and the southwest Atlantic [1978, eng] **J-21554**
Reduction in the South Pacific zone of high bottom current activity [1978, eng] **J-21568**

South Pole
Nitrogen in south polar ice and snow: tool to measure past solar, auroral, and cosmic ray activities [1977, eng] **F-19679**
Microparticle analysis of the 101-meter South Pole ice core [1977, eng] **F-19681**
Fixed nitrogen in antarctic ice and snow [1978, eng] **F-21530**
South Pole approach [1978, eng] **G-20061**
Respiratory virus infection late in isolation at the South Pole [1978, eng] **H-21607**
Measurements of trace gases and aerosols in the antarctic stratosphere [1977, eng] **I-19699**
Meteorological research aboard instrumented LC-130R airplane and at the South Pole [1977, eng] **I-19704**
Seasonal and frontal variation in antarctic aerosol concentrations [1978, eng] **I-20781**
Determination of the chemical composition of South Pole aerosol [1977, eng] **I-21054**
Climatonomical modeling of temperature response to dust contamination of antarctic snow surfaces [1977, eng] **I-21377**
Global and regional N20 measurements [1978, eng] **I-21481**
Geophysical monitoring for climatic change at the South Pole, 1977 [1978, eng] **I-21618**
Gamma ray activity from radioactive fallout at the South Pole [1978, eng] **I-21620**
Auroras in the cusp region [1977, eng] **K-19720**
Sudden commencement absorption events at the South Pole [1978, eng] **K-20064**
Optical diagnostics of the August 1972 PCA event [1976, eng] **K-20509**
Poleward expansion of ionospheric absorption regions [1978, eng] **K-20544**
Cosmic ray intensity variations [1978, eng] **K-21635**
Search at South Pole for the pendulum mode of the earth's inner core [1977, eng] **L-19673**

South Sandwich Islands
Antarctic toponymy [1975, spa] **A-20263**
Tardigrada from the Antarctic Peninsula and Scotia Ridge region [1976, eng] **B-19561**
New species of antarctic ophiuroid: *Ophiomastus trispinosus* sp. nov. (Ophiuroidea, Ophiuridae) [1977, spa] **B-21430**
Erimicaster gracilis (Sladen, 1883) (Asteroidea, Porcellanasteridae) in the Antarctic Ocean [1977, spa] **B-21431**
Seismicity of the South Sandwich Islands region [1977, eng] **L-19267**

South Shetland Islands
Scenery of the south: Falkland Islands, South Georgia, Subantarctic islands [1975, eng] **A-19370**
South Shetland Islands [1977, rus] **A-21158**
Viviparous echinoderms from the South Atlantic [1965, spa] **B-19412**
Tardigrada from the Antarctic Peninsula and Scotia Ridge region [1976, eng] **B-19561**
Abnormal growth form of *Usnea antarctica* Du Rietz [1976, eng] **B-19564**
Ecological studies in Robert Island (South Shetland) 7. Birds of Robert Island Peninsula [1972, spa] **B-19793**
Biology of crabeater seals [1977, rus] **B-19888**
Antarctic fur seal in the Chilean Antarctic [1977, spa] **B-20908**
Analysis of relationships among antarctic mesofauna and various climatic factors [1977, spa] **B-20910**
Musci taxocenosis of the Fildes Peninsula (King George Island, South Shetland Islands) [1977, spa] **B-20914**
Contribution to the knowledge of antarctic decapods [1976, spa] **B-21013**
Systematics and ecology of ciliated protozoa from King George Island, South Shetland Islands [1978, eng] **B-21149**
Geologic studies in the South Orkney Islands [1977, eng] **E-19655**
Argentine geological research on James Ross Island [1975, spa] **E-20251**
Age of Mount Andrus and Sr 87/Sr 86 ratio of volcanic rocks in Marie Byrd Land and the South Shetlands [1973, spa] **E-21087**
Quartz-pyrite rocks of the South Shetland Islands, western Antarctic Peninsula [1978, eng] **E-21216**
Disruption of bedrock by the growth and collapse of ice lenses [1978, eng] **E-21338**

Sovetskaya Station
Time limit for outdoor activity in Antarctica as a function of wind speed and air temperature [1978, rus] **H-21046**

St. Paul Island
Rodriguez, Darwin, Amsterdam, ... a second type of hotspot island [1978, eng] **L-21052**

Taylor Glacier
Sedimentology of Taylor Glacier debris [1976, eng] **E-19578**
Glacial deposits and the Taylor Glacier [1978, eng] **F-20319**

Taylor Valley
Radiocarbon dating of seal skin and flippers [1968, eng] **B-19843**
Ground magnetic studies of volcanic rocks in the Taylor and Wright Valleys region [1977, eng] **E-19659**
Soil development in the Taylor Valley and McMurdo Sound area [1977, eng] **E-19660**
Paleohydrology of Taylor Valley, Antarctica inferred from pore ice in permafrost core [1977, eng] **E-19999**
Cenozoic subsurface micropaleontology and geology of eastern Taylor Valley, Antarctica [1977, eng] **E-20000**
Chronology of glacial sediments in the Taylor Valley [1978, eng] **E-20361**
Sedimentation conditions in Taylor Valley, Antarctica, from DVDP cores [1978, eng] **E-20372**
Quaternary stratigraphy and glacial history of the Lower Taylor Valley, Antarctica [1978, eng] **E-21354**
Fresh-water diatoms from perched deltas in Taylor Valley, Antarctica [1978, eng] **E-21517**
Paleomagnetism of Ordovician lamprophyres from Taylor Valley [1977, eng] **L-20266**
Gravity survey in the Taylor Valley [1978, eng] **L-20315**
Paleomagnetic studies on DVDP cores from Taylor Valley [1978, eng] **L-20364**

Thiel Mountains
Geology of the Ellsworth Mountains to Thiel Mountains ridge [1977, eng] **E-19646**

Tierra del Fuego
Contribution to the knowledge of the Decapod Crustacea of Tierra del Fuego with some zoogeographical observations [1977, spa] **B-21429**
Sedimentologic approach to lithosphere plate restoration [1978, eng] **E-19989**
Coastal geology of the Darwin Mountains and Tierra del Fuego [1977, spa] **E-21335**

Transantarctic Mountains
Geochronology of the basement rocks of the Transantarctic Mts. [1970, eng] **E-19470**
Geological structure of the Transantarctic Mts. [1964, eng] **E-19508**
Metamorphic basement rocks, central Transantarctic Mountains [1977, eng] **E-19652**
Petrogenesis of Ferrar Group rocks [1977, eng] **E-19661**
Palynomorph preservation in the Beacon Supergroup of the Transantarctic Mountains [1977, eng] **E-19670**
Report on the geology of the dry valley region, Transantarctic Mountains [1973, ita] **E-19877**
New occurrences of dish structure in the stratigraphic record [1977, eng] **E-20015**
Palynologic studies in the Transantarctic Mountains [1978, eng] **E-21510**
Stratigraphy and sedimentary petrology of the Fremouw Formation [1978, eng] **E-21513**
Comparative study of bedrock in the Adelaide (Australia) and Ross (Antarctica) geosynclinal areas [1978, rus] **E-21698**

Tristan da Cunha
Foliose and fruticose lichens from Tristan da Cunha [1977, eng] **B-19455**

Vanda, Lake
Photosynthetic bacteria from Lake Vanda (Antarctica) [1978, eng] **B-21240**
Lake Vanda (Antarctica) revisited [1977, eng] **E-20754**

Vestfold Hills
Disease and injury in the southern elephant seal [1977, eng] **B-19313**

Victoria Land
Taxonomy of antarctic bacteria from soils and air primarily of the McMurdo Station and Victoria Land dry valleys region [1978, eng] **B-20901**
Seal and emperor penguin survey, Victoria Land Coast [1978, eng] **B-21596**
Ecosystem comparisons of oasis lakes and soils [1978, eng] **B-21605**
Geology of some volcanic rocks from the Ross Island, Mount Morning and southern Victoria Land areas [1977, eng] **E-19658**
Resource and radioactivity survey in southern Victoria Land [1977, eng] **E-19663**
First meteorites found in Victoria Land, Dec. 1976 and Jan. 1977 [1978, eng] **E-19919**
Antarctic soil studies using a scanning electron microscope [1978, eng] **E-20106**
Late Cambrian Brachiopoda, Mollusca, and Trilobita from northern Victoria Land, Antarctica [1976, eng] **E-20142**
Study of strontium isotopes in lakes and surficial deposits of the ice-free valleys, Southern Victoria Land, Antarctica [1978, eng] **E-20164**
Stratigraphy of the Taylor and lower Victoria groups [1977, eng] **E-20175**
Tephra in glacier ice [1977, eng] **E-20180**
Study on thermosolutal convection in saline lakes [1976, eng] **E-20227**
Devonian palynomorphs from South Victoria Land [1977, eng] **E-20759**
Stratigraphy of the New Mountain Sandstone [1978, eng] **E-20848**
Regional distribution of Sr-87/Sr-86 ratios and mixing of sediments in the Ross Sea, Antarctica [1974, eng] **E-21484**
Geological studies in the McMurdo region [1978, eng] **E-21506**
Recent decline in available moisture in northern Victoria Land, Antarctica [1978, eng] **F-21339**
Polar dry deserts [1974, eng] **I-20596**

Victoria Valley
Geomorphology and glacial geology in Victoria Valley [1963, eng] **E-19271**
Ages for vida granite and olympus granite gneiss, Victoria Valley [1978, eng] **E-21508**
Ross Sea glaciations: events in Lower Victoria Valley [1978, eng] **E-21527**

Vostok Station
U.S.S.R. national report to SCAR, No.19 [1977, eng] **A-19568**
U.S.S.R. national report to SCAR, No.20 [1978, eng] **A-21064**
Gas content of ice caps [1977, fre] **F-19424**
Artificial borehole deflection in Antarctica [1977, rus] **F-19884**
Influence of climatic and glaciological factors on paleotemperature of continental ice sheets [1976, rus] **F-19973**
Stable isotope variations in snow and ice at Vostok, Antarctica [1977, eng] **F-20121**
Isotope analysis of ice cores from Vostok [1977, eng] **F-20130**
New Zealand work at Vostok Station [1978, eng] **F-20308**
Long-term accumulation characteristics at Vostok Station, Antarctica [1978, rus] **F-20615**
Vertical structure of the ice sheet near Vostok [1978, rus] **F-20681**
Ice deformation in a borehole near Vostok [1978, rus] **F-20725**
Selecting drills for microbiological studies of deep glacier layers at Vostok Station [1978, rus] **F-20726**
Snow accumulation from 1970 to 1973 around Vostok Station [1978, rus] **F-20727**
Comparative characteristics of the main types of climatic clothing of Vostok Station personnel [1974, eng] **G-20522**
Clinical and biochemical studies of human adaptation in central Antarctica as applied to space biology and medicine [1977, rus] **H-19531**
Influence of isolation on body and skin temperature [1975, eng] **H-20986**
Cerebral blood flow adaptation to high-altitude hypoxia in Antarctic workers [1978, rus] **H-21038**
Psychosocial research at Vostok during the 19th SAE [1978, rus] **H-21042**
Time limit for outdoor activity in Antarctica as a function of wind speed and air temperature [1978, rus] **H-21046**
Peripheral blood indicators in wintering 15th SAE personnel at Vostok [1977, rus] **H-21141**
Signatures of magnetic field pulsation activity [1977, eng] **K-19717**
Magnetospheric dynamics programs at Vostok Station [1977, eng] **K-19718**
North-south asymmetry in the intensity of polar cap absorption [1977, eng] **K-20079**
Periodicity in Es occurrence probability at the polar caps [1977, rus] **K-20167**
Intersection of geomagnetic force lines with the interplanetary magnetic field in the evening portion of the south polar cap [1977, rus] **K-20170**
Comparison of inferred and observed interplanetary magnetic field polarities, 1970-1972 [1975, eng] **K-21071**
Position of the day cusp polar boundary [1976, eng] **K-21167**
Atmospheric electricity and solar magnetism at Vostok [1978, rus] **K-21461**

High time resolution studies of sudden impulses [1978, eng] **K-21634**
First observations of gravity tides in the central part of Antarctica [1976, ger] **L-20683**
Air temperature and pressure in relation to gravity in Central Antarctica [1976, eng] **L-20684**
Measuring gravity relationship between Mirnyy and Vostok (Antarctica) [1976, ger] **L-20686**
Soviet-American geophysical research at Vostok Station [1978, rus] **L-21460**

Weddell Sea
Methods of Soviet krill fisheries [1974, ger] **A-20939**
Foraminifera and radiolaria in sediments of the Scotia and Weddell Seas [1967, eng] **B-19519**
Phytoplankton studies in the water column and in the pack ice of the Weddell Sea [1977, eng] **B-19616**
Bird observations in the Weddell Sea [1970, eng] **B-20384**
Observations on krill in a zone of artificial illumination [1970, eng] **B-20385**
Primary productivity in sea ice of the Weddell region [1978, eng] **B-20937**
Birds of the Weddell Sea [1978, eng] **B-21587**
Sediments and sediment processes on high latitude continental shelves [1977, eng] **E-19868**
Sea ice studies in the Weddell Sea region aboard USCGC *Burton Island* [1977, eng] **F-19706**
Green iceberg samples in the Weddell Sea [1978, eng] **F-21541**
Sea ice and ice algae relationships in the Weddell Sea [1978, eng] **F-21544**
Solar radiation measurements in the Weddell Sea, 1977 [1977, eng] **I-19708**
Seasonal climatic variability over the southern oceans [1977, eng] **I-20076**
Solar radiation over the Weddell and Ross Seas [1978, eng] **I-21608**
Early winter storms in the northwestern Weddell Sea [1978, eng] **I-21610**
International Weddell Sea Oceanographic Expedition, 1977 [1977, eng] **J-19619**
International Weddell Sea Oceanographic Expedition, 1976: tritium results [1977, eng] **J-19620**
Tidal currents in the central Weddell Sea [1977, eng] **J-19809**
Water masses and circulation in the Weddell Sea [1977, eng] **J-20029**
Antarctic Bottom Water formation in the Weddell Sea [1977, eng] **J-20030**
Tritium distributions in Weddell Sea water masses [1978, eng] **J-21049**
Heat flow in the Weddell Sea [1978, eng] **J-21572**
Geophysical studies in Antarctic waters with the *M.S. Explora* [1978, eng] **J-21710**

West Antarctica
Regional volcanology [1975, rus] **E-19420**
Effect of climatic warming on the West Antarctic ice sheet [1979, eng] **F-21404**

White Island
Isolated population of Weddell seals [1972, eng] **B-20893**

Whitmore Mountains
Rubidium-strontium geochronology of granitic rocks from Mr. Chapman [1978, eng] **E-21509**

Wilkes Land
Behaviour of antarctic petrels and antarctic fulmars before laying [1977, eng] **B-19813**
Antarctic ice sheet deformation [1978, rus] **F-20744**
Geomagnetic measurement within a glaciological polygon [1978, rus] **F-20746**
Formation and interleaving of abyssal water masses off Wilkes Land, Antarctica [1978, eng] **J-20161**

Wilkes Station
Glaciological investigations near the ice sheet margin, Wilkes Station, Antarctica [1968, eng] **F-19569**

Windless Bight
Auroral infrasonic waves observed at Windless Bight, Antarctica [1977, eng] **K-19724**

Windmill Islands
Metamorphic geology of the Windmill Islands [1977, eng] **E-20540**

Wisconsin Range
Geology of the Scott Glacier and Wisconsin Range area [1967, eng] **E-19398**

Wright Valley
Ground magnetic studies of volcanic rocks in the Taylor and Wright Valleys region [1977, eng] **E-19659**
Formation of the Labyrinth, Wright Valley, Antarctica [1977, eng] **E-20178**
Ra, U, and Th concentrations in Wright Valley cores [1978, eng] **E-20366**
Morphology of chasma walls, Mars [1978, eng] **E-20690**
Soil weathering sequences in Wright Valley [1978, eng] **E-21524**

Yamato Mountains
Geology and petrography of the northern Yamato Mountains, East Antarctica [1977, eng] **E-19311**

GRANTEE INDEX

Alaska, University
B-19609, G-19754, I-20699, I-21609, I-21621, K-19717, K-19720, K-19724, K-20297, K-21631, K-21634

Arctic Institute of North America
I-21493, K-19453

Arizona State Univeristy
E-21498

Bartol Research Foundation
K-20292

Bern, University
F-19688, F-20123

California State University
E-21561

California, University
B-19596, B-19602, B-19613, B-19614, B-20536, B-20854, B-20855, B-21101, B-21102, B-21103, B-21578, B-21579, B-21585, B-21596, E-19419, E-19648, E-20181, E-21005, E-21095, E-21096, E-21497, E-21573, E-21586, F-19678, I-19700, J-19619, J-19620, J-19622, J-19631, J-20029, J-20030, J-20203, J-21023, J-21049, J-21100, J-21545, J-21551, J-21552, K-19719, K-21632, L-19673, L-21526

Center for Advanced Study in the Behavioral Sciences
A-21647

Colorado, University
E-20149, E-21521

Columbia, University
B-21102, E-19258, E-19260, E-19264, E-19265, E-19316, E-19322, E-19655, E-19869, E-21116, E-21287, E-21319, E-21320, E-21327, E-21328, E-21330, E-21332, E-21333, E-21334, E-21504, E-21657, J-19621, J-19913, J-20024, J-21098, J-21130, J-21131, J-21553, J-21554, J-21555, L-20062

Copenhagen, University
F-20119, F-20121

De Paul University
B-21492, B-21581

Delaware, University
K-19722

Denver, University
K-19721

Emory University
B-21149

Florida State University
B-19612, B-21601, E-19263, E-19353, E-19354, E-19635, E-19636, E-19637, E-19639, E-19641, E-19645, E-21564, E-21569, E-21639, E-21640

George Washington University
E-21577

Holmes and Narver, Inc.
G-19730

Houston, University
B-21603, K-20623

Hubbs-Sea World Research Institute
B-19601, B-19603, B-21594

Illinois, University
B-19606, B-20021, B-21102

Iowa State University
B-20632

Kansas, University
E-19663, I-21620

Maine, University
B-19607, B-21584, E-19644, E-19660, E-21517, E-21528, E-21529, E-21575, E-21576, F-19676, F-19687, F-20857, F-21336, F-21537

Maryland, University
I-21050, I-21054, I-21616, K-19712, K-20293, K-20623, K-21623, K-21624

Massachusetts General Hospital
B-19326, B-19595, B-21658

Massachusetts Institute of Technology
E-19869, J-21572

Miami, University
B-21148, I-21617

Michigan, University
B-19843, B-21602

Minnesota, University
B-19597, B-19598, B-19605, B-19751, B-21587, B-21589, B-21590, B-21599, B-21600, K-19714, K-21625

Museum of Northern Arizona
E-21512

Nebraska, University
B-21102, E-19658, F-19685, F-21535, F-21536, J-21098

Nevada, University
F-20113, G-19757, I-19697, I-19701, I-19707, K-19728

New York State University
B-19600, B-21591, E-21508, F-19692, F-19693, F-21539, I-19704, I-20781

North Carolina, University
B-20040

Northern Illinois University
E-19666, E-19671, E-19672, E-19998, E-20000, E-21095, E-21096, E-21506, E-21519, E-21573, E-21574

Nova University
J-19630

Ohio State University
B-21595, E-19374, E-19640, E-19652, E-19655, E-19661, E-19662, E-19670, E-20015, E-20547, E-20753, E-21505, E-21509, E-21510, E-21513, E-21522, E-21523, F-19681, F-20046, F-20128, F-21534, I-21611

Oregon Graduate Center
I-21619

Oregon State University
J-19627

Pittsburgh, University
E-19654

Point Reyes Bird Observatory
B-19604

Resource Management Corporation, Inc.
G-19960

Rhode Island, University
B-21562, E-19418, E-20552, E-20631, E-20798, E-21563, E-21567, E-21570, E-21571, J-19638, J-21568

Roanoke College
B-21149

Stanford University
K-19710, K-19711, K-19911, K-20281, K-20294, K-20295, K-20501, K-20502, K-20503, K-20507, K-20534, K-20997, K-21001, K-21059, K-21626, K-21627, K-21628, K-21629, K-21630

Technical University of Denmark
G-21643

Texas A and M University
B-20043, B-20204, B-21494, F-21544, I-19708, I-19709, I-21608, J-19624, J-19629, J-21546, J-21550

Texas and A and M University
B-21580

Texas Tech University
B-19378, B-21593, B-21604, E-19647, E-20149, E-21499

U.S. Army Cold Regions Research and Engineering Laboratory
F-19330, F-19682, F-19684, F-19689, F-19691, F-19706, F-20067, F-20457, F-21530, F-21544

U.S. Geological Survey
C-19675, E-19642, E-19649, E-19650, E-21501, E-21502, E-21508, K-19718, L-19651

U.S. Library of Congress
A-19725

U.S. National Oceanic and Atmospheric Administration
I-19702, I-21612, I-21615, K-19713

U.S. Naval Postgraduate School
I-21006

U.S. Smithsonian Institution
B-19618, B-20242, B-20853, B-21641

Vassar College
E-21329

Virginia Polytechnic Institute and State University
B-19314, B-19611, B-20892, B-21605, F-21530, J-19623, J-21099, J-21556, J-21557

Washington State University
I-19696

Washington, University
E-19644, E-21517, F-19677

Wayne State University
E-21514

Wichita State University
E-19669

Wisconsin, University
E-19646, E-20181, E-21500, E-21524, F-19686, F-19690, F-19703, F-20857, F-21336, F-21538, H-19591, H-19592, H-19593, H-21606, I-19694, I-19705, I-21610, I-21622

Woods Hole Oceanographic Institution
J-19626, J-19628

Wyoming, University
I-19699, I-21615

TRENT UNIVERSITY
0 1164 0088381 9

333723

333723